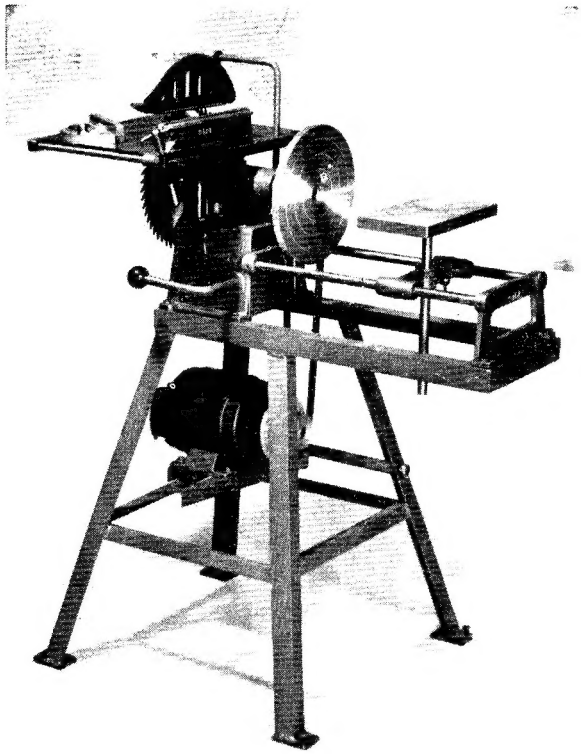
CARPENTRY IN THE KITCHEN

HOW TO MAKE:

Doors, shelves, tables, steps, cabinets, cupboards, an ice chest, coolgardie safe, and tallboy safe, laundry fitments and a furnished alcove for meals

2/6

No. 2 of CARPENTRY FOR ALL by Alex Smith



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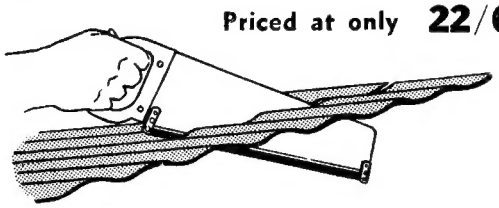

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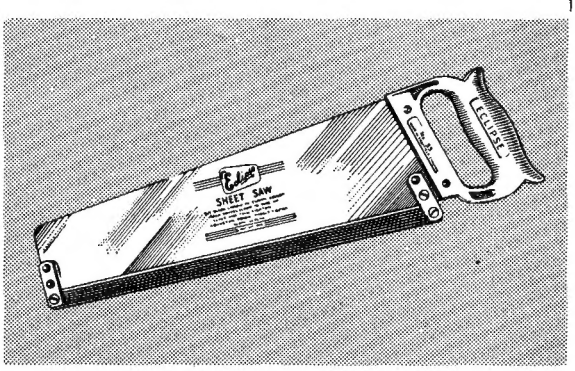

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CONTENTS

CARPENTRY IN THE KITCHEN

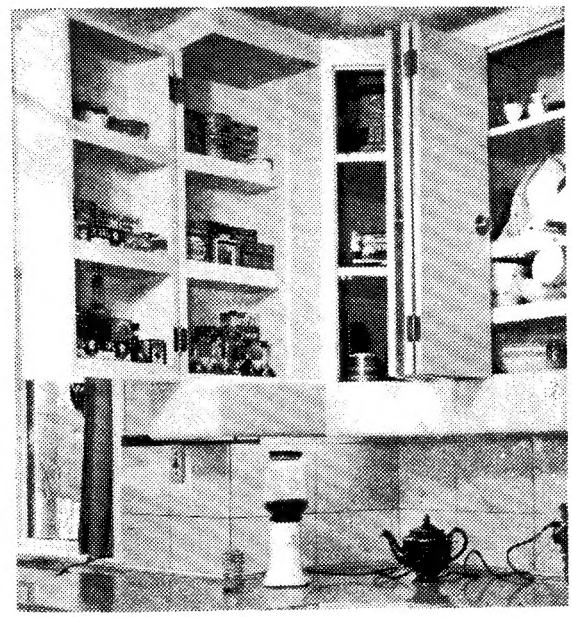
CARPENTRY FOR ALL No. 2

By Alex Smith, F.B.I.C.C.

ARRANGED AND EDITED BY W. A. S. SHUM

WATCH FOR No. 3 OF THIS SERIES

THE COMPLETE KITCHEN



Section of the specialised cupboard storage shows how attention has been given to every detail.

KITCHEN WALLS ARE NOT just bricks and mortar to keep out the wind and the rain. They are supports for the battery of cabinets which place working tools and utensils, dishes and food supplies within an arm's reach from the work benches.

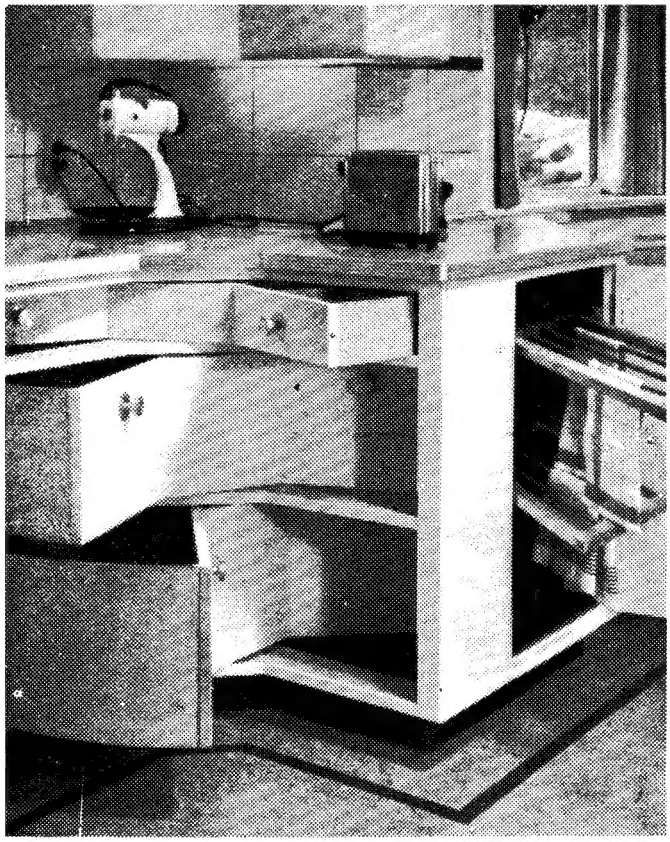
Survey has shown that 30 ft. of shelves below the working benches and about 20 ft. of shelves above are the minimum requirement for an efficient average family kitchen. Enclosed shelves are, of course, desirable for protection against dust. Flush doors with no dust-catching ledges or ornaments are hygienic.

Top cupboards are best extended to the full height of the kitchen to prevent dust accumulation as well as to increase storage space for seldom-used goods. Bottom cupboards should form a continuous working counter for food preparation and service.

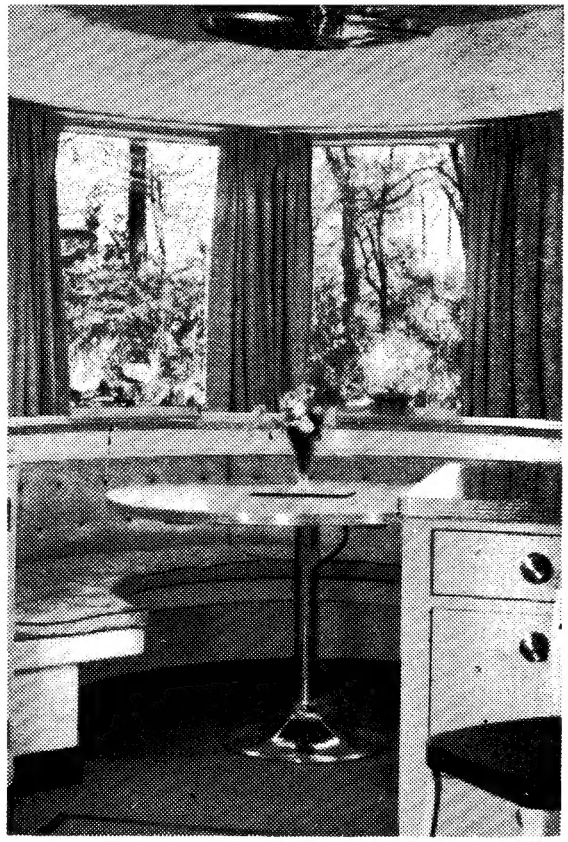
These work counters must be high enough for comfort. Too-high or too-low counters cause unnecessary fatigue and backstrain. To check the most suitable working height for your own kitchen, stand with shoulders relaxed and elbows bent in a normal and comfortable working position. Let the hands fall and the finger-tips should just reach the bench top. The average working counter is 2ft. 9in. to 3ft. high. Kitchen stools should be graded comfortably to this height.

Cupboard contents should be arranged in relation to the kitchen work centres — food storage cupboards near the tradesmen's entrance, baking utensils above and below the preparation centre; china cupboard near the serving centre.

If the room is large enough to take a centre table, mount the table on casters so that it can be moved easily from cupboard to cupboard,



To save space in this kitchen certain drawers swivelled instead of pulling out.



In this kitchen the dining alcove was set into a curved window, hence the circular table.

from refrigerator to sink, from sink to stove, and from kitchen to dining-room. Kitchen meal stools and work chairs that fit into a cupboard recess, and present a flush surface when not in use, are smart.

Designs of streamlined benches and tables that either fold into the wall or slide up to form the fronts of china cupboards are worth studying when equipping the very small family kitchen.

The combination stool and ladder is almost an essential, for few of us are tall enough to reach into upper cupboards. The base of this stool ladder must be heavy and wide.

A close study of efficient kitchen work movement in relation to cupboards has resulted in the following conclusions:—

Deeper lower cupboards, up to 2ft., allow for adequate space on the work bench.

Shallow top cupboards, 1ft. 2in., are more convenient. These allow for comfortable head space when working on the counters below the top suspended cabinets.

China cupboards should be deep enough to hold a large meat dish.

Cabinets with varying distances between shelves are practical.

Open space between upper and lower cabinets is best about 1ft. 6in.

Toe space or a cove of 2 to 4 inches at the bottom of lower cupboards makes for a comfortable working position when standing.

Knee space in at least one work spot in the counter cupboards gives a comfortable working position when sitting. This can be given by a recessed cupboard or by a pull-out shelf that is sturdy enough to allow for chopping processes, pastry-making or to hold heavy utensils. If a centre table is used in the kitchen, this is not important.

Pull-out shelves under working counters give added work area. They must be secure.

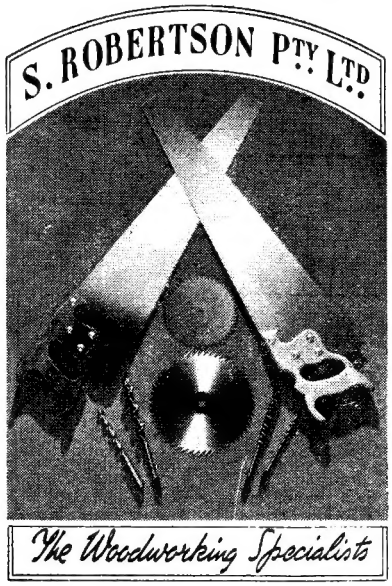
Sliding shelves with a security catch on the back are more convenient than fixed shelves in the lower cupboards. They lessen the need for stooping and rummaging.

Cupboard doors that roll up or slide are space-saving and tidy. They are recommended especially for top cupboards. Plate glass sliding doors, with a finger recess for operating, are smart for china and preserve cupboards.

A rack on the inner side of an upper cabinet door is effective for holding stores of small quantity ingredients such as herbs, spices and essences. A good many small things that clutter up a kitchen and can get lost in a big cupboard can, in this way, be within easy reach and yet out of sight and off the work bench.

Pigeon holes, with fitted bottles, built under the upper cabinets, are convenient for holding articles that are in daily use.

A rack or row of hooks, on the inner side of one cupboard door, is convenient for hanging small light measuring equipment.



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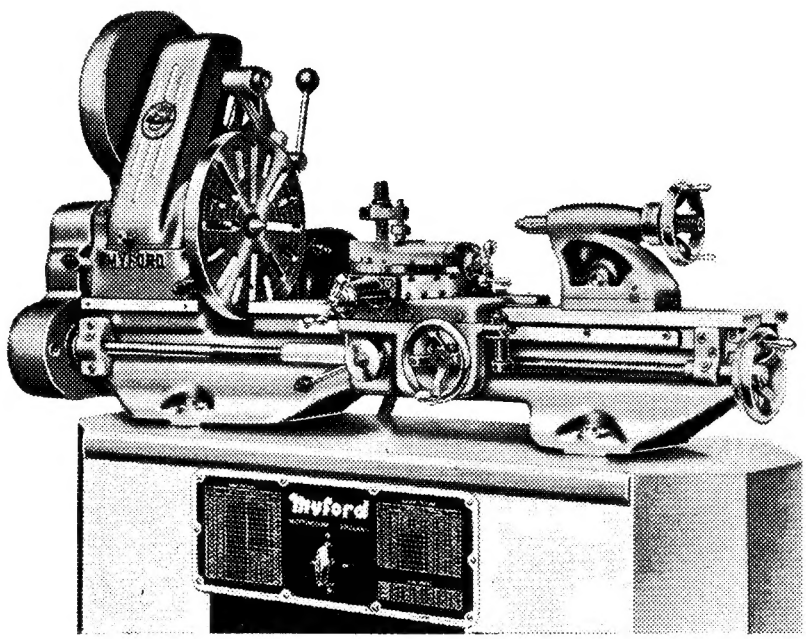

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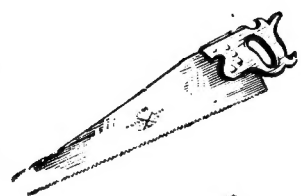
Ideal for all small work. 25/-.



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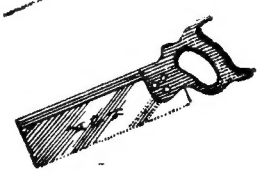

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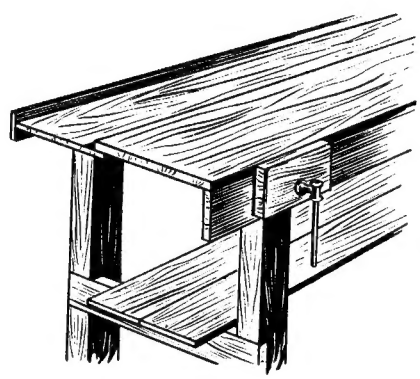

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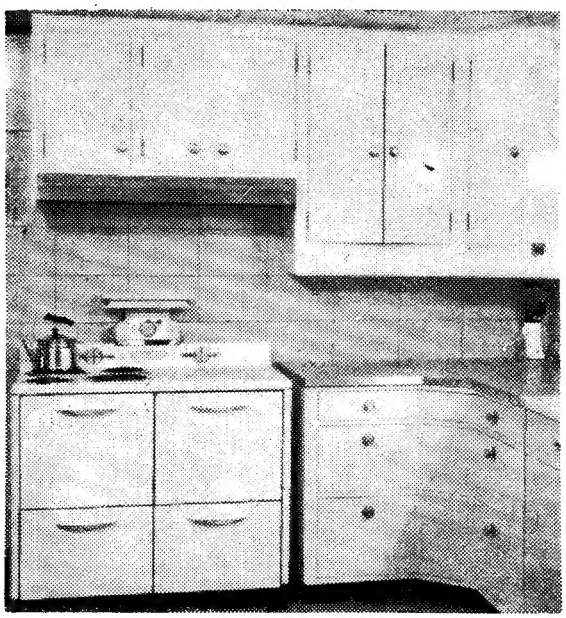


An automatic electric range has been placed centrally for simplification of cooking operations

A rack on the inner side of saucepan cupboard door is convenient for lids. Pots and pans are more accessible on a rotary roundabout shelf.

Bottle space (upright) should be allowed in one bottom cupboard, preferably near the refrigerator.

An upright filing rack should be built in one cupboard for oven trays and tea trays.

A long cupboard for mops and brooms and cleaners is best placed near the door. Pockets of wood inside the door are useful for dusters and polishers.

A towel rack sliding into a cupboard partition, well ventilated and preferably near the cooker, is tidy and convenient. Tea towels and dish cloths look messy so quickly, but must be easily to hand.

Cupboards under the sink should be well ventilated.

A ventilated food cupboard is essential for a kitchen with or without a refrigerator.

Two sliding wire vegetable baskets in a bottom cupboard are sufficient for the average family. The cupboard must be ventilated.

A shelf over the cooker is convenient for seasonings.

A kitchen garbage bin is essential. A light bin on a shelf, attached to the inner side of the sink door, is convenient and inconspicuous.

Working counters on the top of lower cabinets are best covered with plain inlaid linoleum edged with moulding. Place cork or wooden mats on the counter next to the stove, especially if rubber linoleum is used.

Allow space for kitchen desk when planning cupboard allocation. Accounts, receipts, recipe and menu files and cook books need storage space.

Double-acting hinges on cupboard doors eliminate catches. —Australian Home Beautiful

SHOE SHINE—WITHOUT TEARS

by Ronald Rosenfeldt

SHOE BRUSHES AND TINS of cleaner seem to disappear mysteriously at critical times. They're not in the place where we thought we left them. Perhaps they're hidden in the bottom of that dark cupboard, or are they in the laundry? Wherever they are, we'll be late.

There'd be fewer frayed tempers if those elusive brushes and cleaner were in a convenient container to be used at a second's notice.

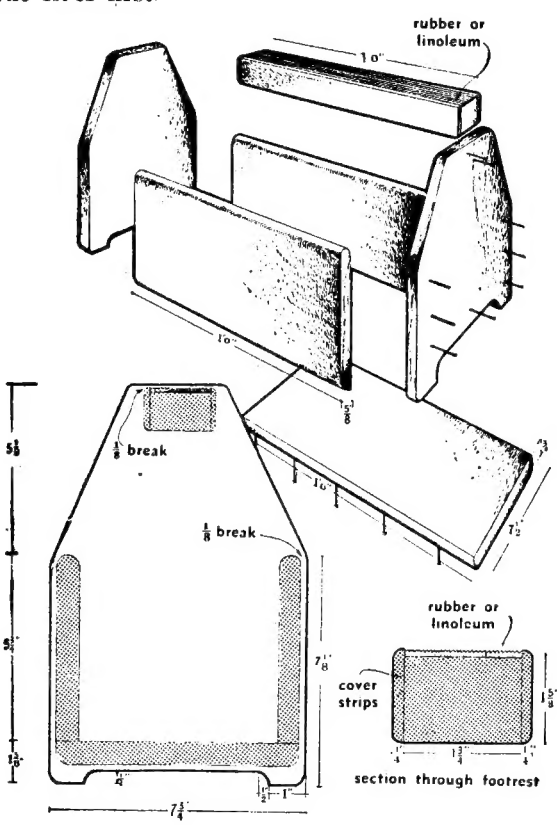
With these problems in mind, this simple little shoe tidy (complete with footrest) has been designed for your convenience.

It's simply made, and, as the diagram below shows, very little material is required. The cost is a couple of shillings.

Details for cutting and assembly are shown in the accompanying diagrams.

After cutting out and planing to size, sandpaper each member, taking care to knock off all sharp corners.

The diagrams show the parts ready for assembly by nailing together. For extra strength, it is suggested that the members be dowelled together, in which case the bottom is nailed to the sides first.



The cover strips are bradded to the footrest after the rubber or linoleum has been fixed with adhesive and tacks.

When completed, give the shoe tidy a final clean up with fine sandpaper and apply an undercoat. Enamel to suit.

TO REMOVE SHOE POLISH STAINS

Sponging a stain with methylated spirit will remove a tan shoe polish stain. For black polish marks, try turpentine or carbontetrachloride.

Points

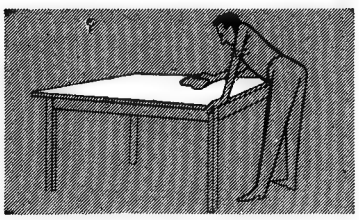
The use of soap in driving nails and inserting screws has already been recommended. Some ingenious handyman suggests that a ⅝ hole bored into the end of the hammer handle would form a useful receptacle for a wad of soap.

The same correspondent writes that two oil cans, which were useless because of pinholes, were turned into most efficient funnels for filling small bottles. He uses them for filtering photographic solutions.

HOW TO PRESS LAMINEX

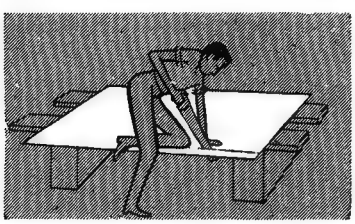
To Table and Bench Tops

Although the best results are obtained by using mechanical means to press Laminex on to table and bench tops, the job can be quite satisfactorily accomplished by using simple equipment at home.



PREPARATION

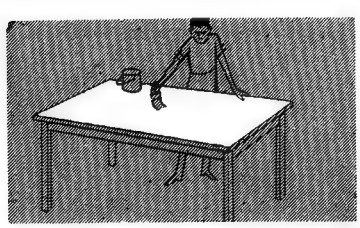
First ensure that table top or work bench surfaces are flat, and free from grease, paint and other foreign matter. If a rubber or latex adhesive has been applied previously to a surface to be bonded and a Urea Formaldehyde type adhesive is to be used, after removing the rubber adhesive wash down the surface with diluted vinegar and leave for at least one day before bonding. Then rub surface over with coarse emery cloth or sand paper to assist bonding. It is preferable first to mount the Laminex onto plywood or hardboard, both of which have a perfectly flat surface; but if the timber top is well seasoned and has been glued and edge jointed, Laminex can be bonded satisfactorily to it without using plywood or hardboard.



CUTTING

Laminex can be cut with a bandsaw, a fine circular saw, or with a panel saw. Cut slightly bigger than the finished size in case of slight side slip during pressing.

The panel should be held down firmly while being cut so as to avoid chatter and consequent chipping.



GLUEING

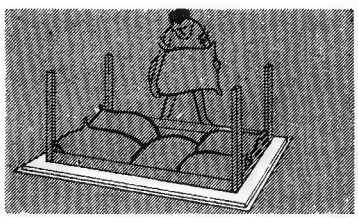
Except for the adhesive used the methods are simple and differ little from those used with wood veneer surfacing materials. Where there is moisture present as in a draining board adjacent to a sink, any well known brand of Urea Formaldehyde adhesive is recommended such as ICI No. A260 with Hardener C.S.3. for use in warm weather, and C.S.2. in cold weather. Use 10 parts of No A260 to one part of Hardener. Three to five pounds of mixed adhesive is normally required for every 100 sq. ft.

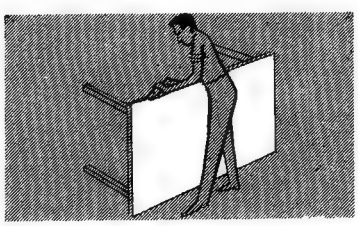
Where there is not moisture, casein glue is recommended, grades such as Nightingales Grasp No. 8, "Casco" type "A" or the equivalent in other brands are suggested.

The back surface of the Laminex is sanded in manufacture to provide a key for the adhesive. Apply a thin coat of glue to both the Laminex and the surface to be bonded.

NOTE: Do not use rubber-base glues.

PRESSING A simple way of obtaining an adequate and even pressure essential when bonding Laminex to table top is to place the Laminex face downwards on a flat section of floor, after the application of the adhesive as mentioned above. Turn table upside down and place it on the glued Laminex Then cover the back of the table with bags of sand or earth, providing an even pressure over the whole surface. If you have sufficient flat solid timber to cover the whole area of your table, the following method can be used: Apply the glued Laminex to the table top, cover the patterned surface with paper, then place the solid timber on top of the paper and use G clamps about every 12 inches. For both methods pressure should be maintained for at least 24 hours. When applying Laminex to kitchen work benches, the above procedure may be followed in principle, pressure being applied by means of sand bags placed on solid timber or a table upside down. Ensure that the patterned surface is covered with paper during any pressing operation.





FINISHING

Excess Laminex projecting over the edges can be removed with a plane, preferably metal soled, or with garnet paper or emery cloth on a flat wooden pad.

Finally to finish the edges, apply lacquer or use the Laminex plastic cover strip beading which is obtainable at all Laminex distributors. This beading is made in both flat and barbed types and is designed to give a neat and attractive finish to table edges.

The barb provides a means of fixing the beading firmly, and holds it flat against the table edge without screws or nails on the face of the bead. The method of fixing is first to cut a groove a little less than the thickness of the barb and about 7/16in. deep in the edge of the table or bench, with a grooving plane or circular saw. The barbed section is then coated with glue and forced into the groove until the beading is tight against the table edge.

Sharp right angles should be avoided and table corners rounded to approx. 1½in. radius, so that by removing a short section of the barb at these points, the edging may be used in one length. Flat beading is used where no facilities are available for grooving. The beading may be held in place with either round-head screws or escutcheon pins.

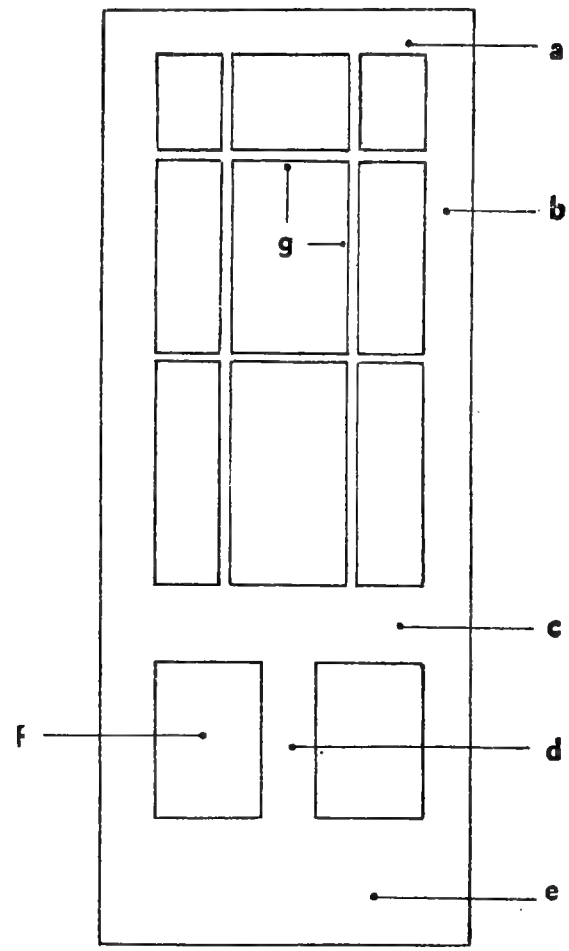
A White rubber-base cement will assist in holding the strip perfectly flat against the edge. Here again sharp angles should be avoided and corners rounded.

LAMINEX

THE ULTIMATE IN SURFACING MATERIAL

KNOW YOUR DOOR

AN EXTERNAL DOOR IS hung to a frame comprised of head and stiles from 1½in. to 3in. thick with a sill of timber or other material. Internal doors are hung to linings from ⅞in. to 1⅛in. thick which cover or "line" the rough wall opening and are without sills. They have no stability of their own but depend on being fixed to the walls



Parts of the door shown are:

a. Top rail.
b. Stile.
c. Middle rail.
d. Muntin.
e. Bottom rail.
f. Panel.
g. Bars.

Note that the middle rail is not in the centre of the height as its name would seem to imply. This workshop term is more likely an abbreviation of "intermediate," especially as there may be several similar rails in the same door.

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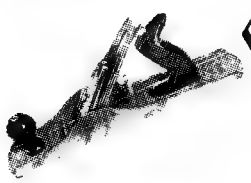
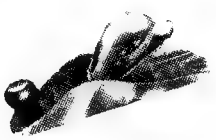
No. 400 Smooth Plane

The 400, 500, 600 planes as illustrated are all fitted with black shockproof plastic handle and knob, and to allow for finer adjustment of the cutters they are equipped with unbreakable locking plates with screw locking device in place of the usual type of cam. Cutter irons are made from the best Sheffield steel.

No. 600 Fore Plane



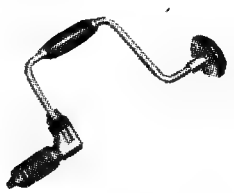
No. 500 Jack Plane



No. 11 Block Plane (non-adjustable). The cutter is locked in position by a knurled wheel. Length 7". Cutter width $1\frac{5}{8}$".

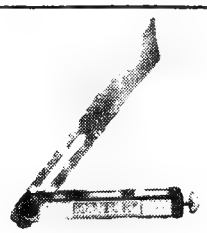
No. 3 Plough Plane, for grooves, $\frac{1}{2}$" deep to 4" from edge of work. Supplied complete with three cutters $\frac{1}{8}$", $\frac{3}{16}$" and $\frac{1}{4}$" wide.

No. 151 Adjustable all metal Spokeshave. Full cutter adjustment of $\frac{3}{8}$". Length 10". Cutter width $2\frac{1}{8}$".



De Luxe Ratchet Brace (Type C). 10" sweep double ratchet. Ball bearing head.

Sliding Bevel. 10" steel blade. 6" body. Screw adjustment locks blade at any angle.



No. 133H Spiral Rachet Screwdriver Automatic drive and withdraw. Right and left hand. Length 10".

No. 8 Breast Drill. Two speed quick change, 3 jaw chuck, machine cut gears, capacity $\frac{1}{2}$".

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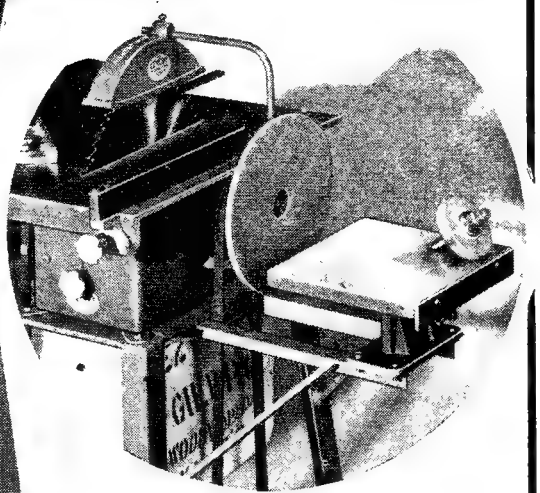

PRICE

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- COMPLETE

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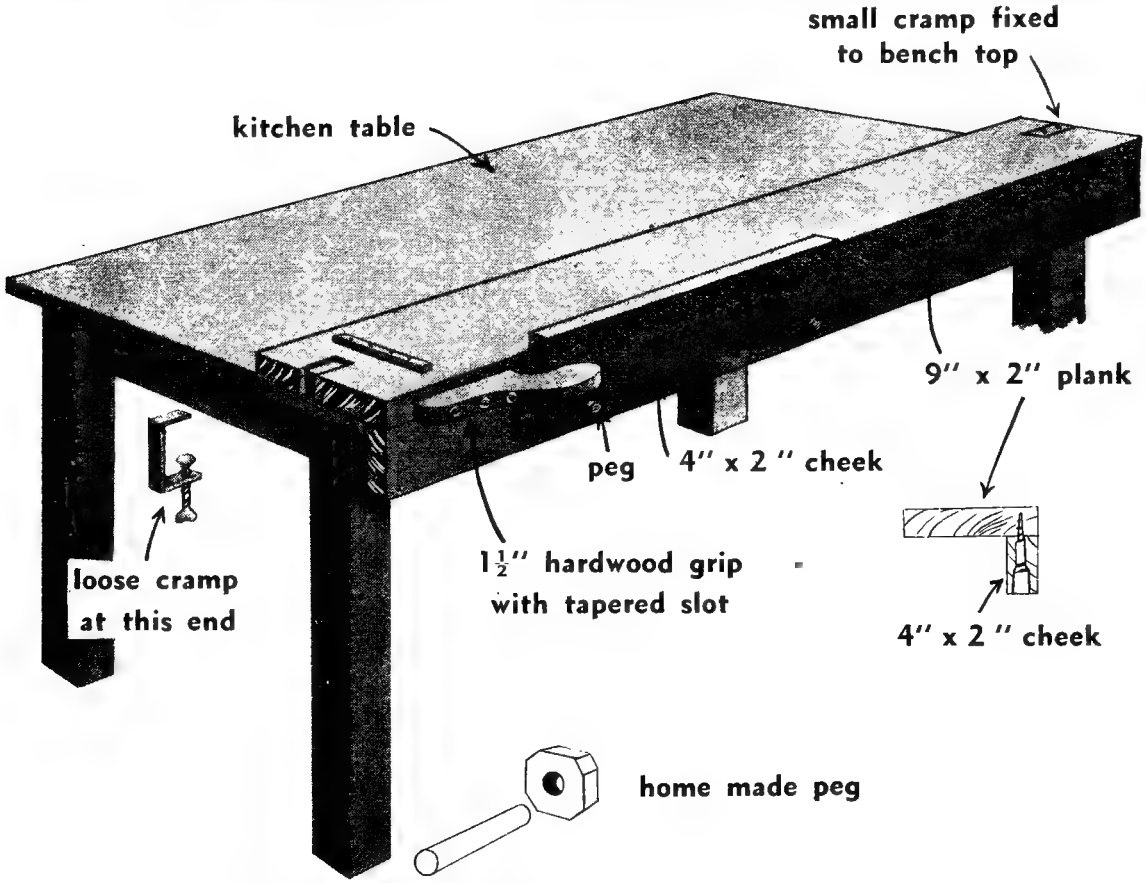
A WORKSHOP IN THE KITCHEN



ALTHOUGH THERE IS NO adequate substitute for a strong bench with its quick action vice, a good deal of work can be done without damage to an ordinary kitchen table with the aid of the false front shown in the sketch.

A 9in. x 2in. plank of dry oregon or other straight softwood with annual rings as shown on the end has a 4in. x 2in. cheek screwed to it from underneath. 2in. screws about 18in. apart will do if they are sunk in for part of their length. The cheek should be shot to a straight joint and glued before screwing.

A hardwood cleat with a tapered slot in one end should be glued and screwed on to hold boards edge upward for planing.

Three-quarter in. holes at 9in. intervals will take pegs which can be made from dowel glued into heads cut from waste. These will keep the tail of a board from swinging outward.

Fix a strong "thumb" cramp to the tail end of the bench plank by letting it in flush and drilling for screws on top and in the end, otherwise it will work forward when planing is in progress. The cramp at the other end will need to be loose to allow the fitting to go on the table, but it too should be sunk flush as indicated.

Some years ago there used to be a very handy combined cramp and 4in. vice which was ideal for benches of this kind or as auxiliary to standard equipment. I have not seen these lately, but when general supplies are normal they should be available and can be recommended.

One of the disadvantages of kitchen work is lack of hanging space for tools such as bits, chisels and small saws, which in a workshop can be lifted down and replaced as work proceeds. A handy substitute is this tool tray:

Cut two 24in. and two 14in. of 3in. x ½in., and fix them with glue, nails, and an angle block in each corner to make tray sides, on which a plywood or masonite bottom can be glued and nailed with ¾in. flatheads.

Now lay the tray on the table and arrange chisels, bits, etc., as convenient before marking places for 1½in. x ⅜in. partitions to be fitted for nailing through ends and bottom. A 6in. length of batten bored to take a ⅞in. "dowel" handle can be screwed upright on each end.

Full advantage should be taken of the tray by replacing each tool immediately its particular job is finished, for in that way they will be quickly found again when required and will run less risk of damage.

House your oilcan in the tray because, if left loose, it may quite easily be knocked off the table and cause a floor stain most difficult to shift.

HOW TO MAKE DOWELLED JOINTS

ALTHOUGH THIS IS PRE-EMINENTLY a series of lessons for beginners, I find that many amateur carpenters and some tradesmen, too, have never grasped the basic principles of doweling.

I do not remember hearing of a rule for arriving at thickness and spacing of dowels for use in varying sizes of stuff. In the workshop one becomes accustomed to seeing certain diameters used for certain jobs, and there is usually a wide range available; but where it is a matter of buying one or two sticks, some guidance may be acceptable.

Regarding diameter, it would probably be safe to take half thickness of the framing as a standard; that is, if one were using ¾in. stuff for a door, then ⅜in. dowels would be suitable; for ½in. stuff use ¼in. dowels and so on. But there is, of course, no need always to hunt for 7/16in. sticks in a 7/8in. job, although these too are available if required; the general practice here is to use ⅜in. rods. When spacing dowels, the absolute minimum distance of the first centre point from the end of such a door stile as is shown in fig. 2 would be equal to the diameter of the dowel, and unless extra horns are left on whilst the work is in progress it is always safer to allow an extra ⅛in.; that is, ½in. from the end for a ⅜in. dowel, as at A fig. 6, which shows a template set out for a 2in. rail. One has to remember also when making a door that there may be a certain amount of fitting necessary later, and if dowels are too close to the end the grain may break away and the dowel be left exposed.

On small work a good rule would be to divide the available timber into four equal parts as at A fig 6, or as at C and D, which show how the available area is reduced when members must be grooved or rebated.

On jobs with wide rails allow a dowel for every 2in. of width and on table tops and the like, which are dowelled on the edges, start 3in. from each end, and space the intermediates not more than a quarter of the table length apart.

Reduced to a formula, our conclusions read as follow:—

1. *Thickness of dowel*—Not to exceed half thickness of framing.
2. *Distance from end of rail*—Diameter of dowel plus ⅛in.
3. *Spacing on rail.*—Divide available material into four parts and use two dowels, or, if more are required, allow one dowel for every 2in. of rail width; i.e., three dowels in 6in. stuff, four in 8in. and so on.
4. *Spacing on edge joints*—Begin 3in. from each end and do not exceed quarter of table length for intermediate spaces.

Having cleared the position somewhat with regard to spacing, we can now turn to the actual setting out for which several methods are available according to the size of job to be handled. **Figs. 1** to **4** show the simplest way of dealing with a small door or such a frame as might be used for a wall mirror or a hat rack. Here the members have been sawn off to neat lengths and shot square on a shooting board before being cramped in position and perfectly square.

Assuming the material to be 2in. wide, the lines are drawn half an inch from each edge across the joints, before the frame is taken apart and all lines squared across edges as in **fig. 2.** Note the face marks. These are important on all work, because gauging must be done from the marked sides, as at **fig. 3,** before the centre points are pricked in with a sharp awl to ensure a good start for the bit.

The next sketches show the general method on larger frames. Here a group of pieces is cramped up whilst lines denoting rail edges are squared across. Two methods of marking actual dowel positions are now available, the workman may set out and square them over and afterwards gauge similar lines on rail ends or he may prepare a template and mark all centres with an awl, a method I prefer to use wherever possible.

For a single job such a template as shown at **A fig. 6** will serve. It is cut from card or plywood and applied to central gauge lines on rails and stiles, but for repetition work **B** is better if carefully made from galvanised iron or tin.

As a precaution on fine work, a light gauge line is sometimes helpful even in conjunction with a flanged template, because it shows at once if the workman has been careless when holding the template and allows him to rectify the error before it is too late.

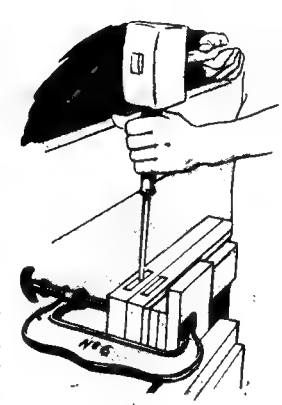
Fig. 10 shows another application of the flanged template in which flanges are at unequal distances from the dowel line so that they may

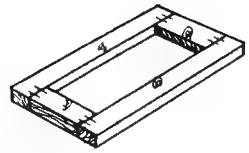
An Excellent Method of Fixing Short Stiles for Mortising

A spare piece is fixed into the vice, and the ones to be mortised are cramped to it.

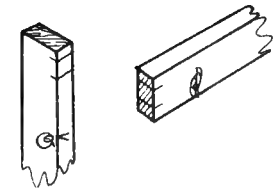
In order that the work shall be kept well away from the bench edge a packing piece is interposed as shown, whilst the tail-end of the work is secured by means of a bench knife.

The bench knife itself is worth a special word to those who are beginning woodwork. It is made from a broken table knife, and is about 1½in. long. Much small work that is usually fixed to the bench by means of nails could be more firmly held by driving the bench knife into the angle between the end of the stuff and the bench. This method thrusts the work hard up against the bench stop, whilst being only slightly destructive of the bench itself.

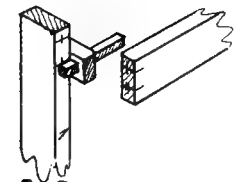




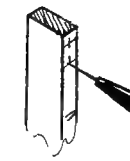
1. Cramp door stuff together and mark dowel lines across joints.



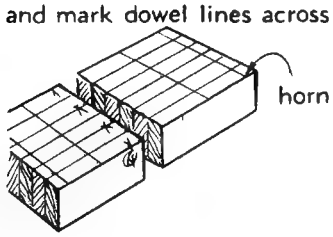
2. Square the lines over edges and ends.



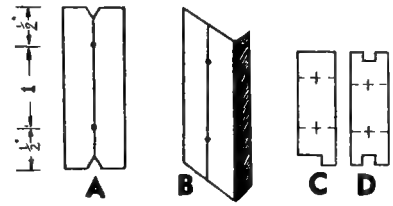
3. Gauge all centres from face sides.



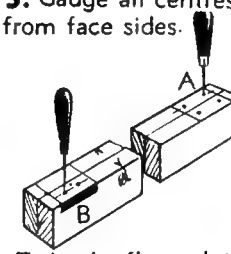
4. Prick centres with an awl



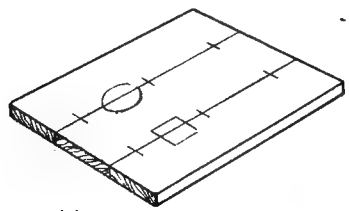
5. Cramp long stiles in pairs and mark rail lines.



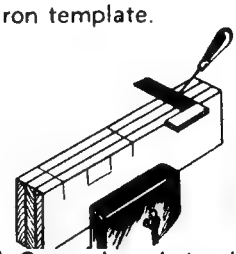
6. Prepare cardboard or galv. iron template.



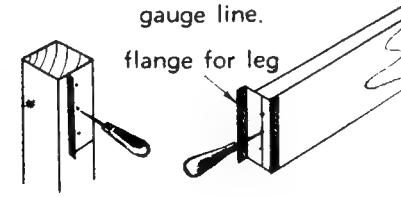
7. Apply flanged template B from face side, or plain template "A" to gauge line.



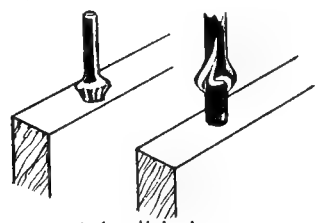
8. Shoot table top joints and mark them like this.



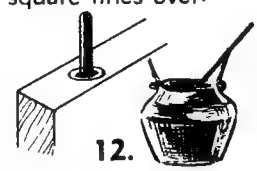
9. Cramp boards in vice and square lines over.



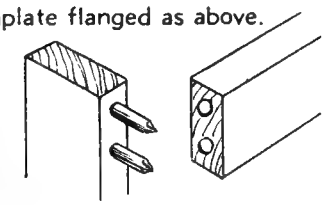
10. Mark legs and rails with a template flanged as above.



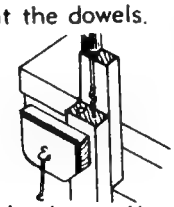
11. Counter sink all holes and point the dowels.



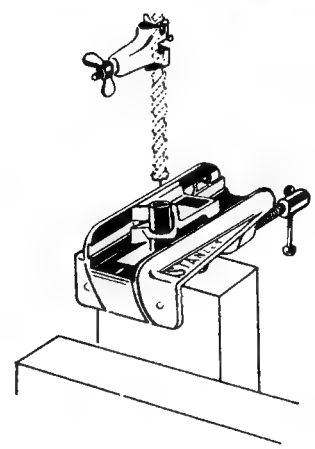
12.



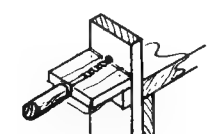
12. and **13.** Glue holes with a stick and drive dowels in stiles or legs.



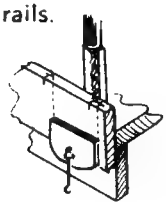
14. An inch depth is sufficient for small door rails.



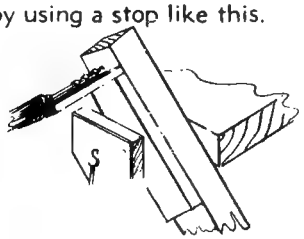
17. This jig saves time and ensures accuracy.



15. Avoid boring through seat ends by using a stop like this.



16. Door stiles and edge joints can be bored in this manner.



18. Straight holes of correct depth are vital for table legs.

14 TO 18 GUIDES TO DIRECTION AND DEPTH

be applied to legs and rails of tables or in other work where two thicknesses of stuff are used.

The setting out of edge joints is best accomplished by shooting the edges first and cramping boards together whilst dowel centres are marked. The square and circle shown are for purposes of identification during gluing and should be big enough to be seen at once when one is working smartly. These marks will also indicate face side when gauging, so that chances of error here are practically eliminated.

Before discussing actual boring operations it is necessary to say something about the depth of dowel holes for different jobs. Consider the purpose of dowels in **figs. 1** and **8,** the first-named are like tenons, they hold the job together, as no amount of gluing on the end grain of rails would do; but in such a table top as is shown in fig. 8 it is quite probable that the joint would hold without dowels, also it will later be supported by rails of the table itself. Why then use dowels at all? Anyone who is regularly edge-jointing boards knows how difficult it is to keep face sides flush when gluing if one piece is round and another straight or hollow on the face, and knows also that if a joint is not brought level there will be a fair amount of cleaning off to be done later, which will take time and reduce the thickness of material. Dowels which are all set out from face sides help to prevent this; therefore their first advantage is in quick location when gluing.

It will be granted also that although there is very little danger of a table top pulling apart, it may be subjected to considerable transverse stress when a weight is dropped suddenly upon it, and here again dowels may fulfil a very useful purpose in stiffening the joints.

Both these purposes are met if dowels penetrate ¾in. into each board, and they should in polished work very nearly fill the hole on each side of a joint, or when shrinkage occurs the unoccupied space will be visible in the form of a slight depression.

Fig. 11 shows two very necessary precautions to be taken, namely the countersinking of holes to form recesses for surplus glue and the pointing of dowels to facilitate entry; also the sticks should be grooved so that air may escape as the dowels are driven.

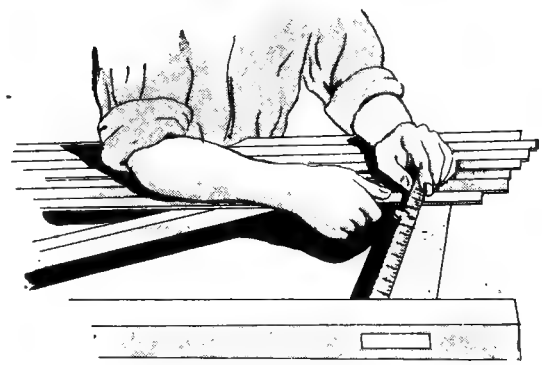
For angle joints in stuff up to 2in. wide a depth of ⅞in. into each piece is sufficient, and it is advisable to drive the dowels into stiles or legs before dealing with the rails, because, by working in this manner on jobs such as **figs. 10, 13** and **15,** the maximum grip is obtained where it is most needed and rail holes can be bored deep enough to give clearance.

Figs. 14 to **18** illustrate some home-made jigs for guiding and stopping dowel bits, also a Stanley dowelling jig, probably the most useful tool invented for this class of work. It consists of a cramp, furnished with a series of interchangeable sleeves to guide the bits, and a stop to ensure that all holes are the correct depth.

When dowelled, framing must be rebated or grooved for panels or glass, allowance is made, as at C and D **fig. 6,** and the boring completed before rebates, etc., are run. If the joints are to be step-shouldered as in a mortise and tenon job, the rebating will be done before assembly, but the general practice in machine shops is to leave all shoulders square, glue the job together and rebate on a french spindle afterwards. This leaves nothing but the corners to chop out, and as the face of the door or framing has already been cleaned up, the square member in front of the rebate is of even thickness all round. It is possible to get this kind of work done at the various mills, and many of the smaller cabinet makers square joint their frames and afterwards pay for rebating or moulding.

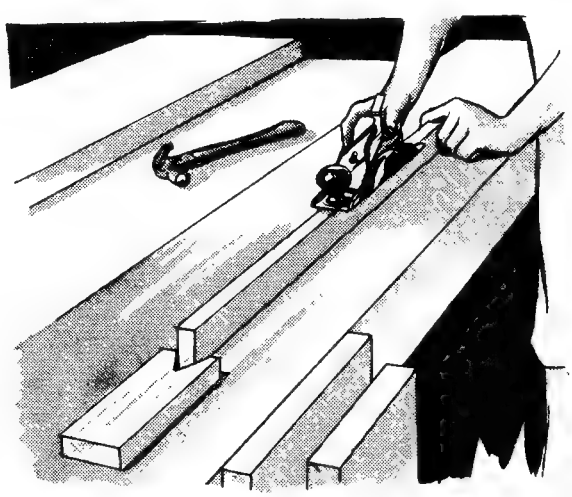
WORKSHOP WISDOM

Spacing Laths on a Trellis Gate



When a number of trellis laths are to be spaced across a gate, lay them side by side against the left hand stile, measure the remaining distance as shown above, and divide it by one more than the number of laths because you will need to start with a space.

Cut a spacing lath, exactly the right width, to hold between the others whilst nailing.



A block of timber with a V cut in the near end serves as well as a vice when planing strips; it certainly saves time.

SOME HELPFUL GUIDES AND TOOLS

IN MANY A HOME the kitchen is the first room in which the handyman finds a job to do. Often indeed it is his temporary workshop. Assuming that the reader is in the early stage of home carpentry, it might be wise to spend a little time on elementary joints and home-made equipment.

The first bit of advice for those who intend to work with the family saw is to send it at once to be sharpened. No amount of care will make a saw cut straight when it is in bad order. Cutting with a sharp saw is very much like making a successful drive at tennis—it depends on taking a firm grip, keeping both eyes on the job and following a stroke clean through.

A great deal of difficulty is experienced by beginners who try to saw along a line. For practice, on a waste piece, try starting with two lines ⅛ in. apart. Then, with the piece held as in **figure 1**, start with a light upward stroke and no weight on the saw. Follow that with a full downward stroke without the slightest attempt to jab or force the saw through the fibres.

Proceed in that way with the index finger along the handle and the other three through the grip, pushing the saw forward and drawing it back while its own weight deepens the cut. The purpose of the two lines will soon become apparent.

The instant the saw wanders to right or left one of the marks will show the error. A single mark might easily be cut right out before change of direction was noticed.

Distance between the marks when cutting stuff to length will depend on the saw. Try it on a waste piece first.

Round material such as dowel or a roller is most easily sawn in a jig (guide) like **fig. 2** made from a piece of 3 in. x 1 in. batten with a strip nailed in front. When gripped in a vice or screwed to the edge of a packing case, dowels or rails can be sawn to exact lengths and will have square ends, more important than is sometimes realised because a crooked end may prevent a joint from being cramped right up.

Fig. 4 shows how halvings should be sawn along the grain before being shouldered (as in **fig. 6**). If a vice is available, cramp the pieces in it at a pitch of about 45 degrees so that gauge lines on edge and end can be seen. Then start on a corner as shown and rip diagonally across before turning the pieces over and finishing the cut.

Here the job is being done on a packing case with the pieces pushed hard against a batten and, if necessary, wedged from the other batten with a short stick.

With one knee on the pieces, start the saw as shown and remember to cut inside the waste. Do not be tempted to chop waste out of halvings with a chisel. If the grain is crooked the cut will follow it, but careful sawing will follow the gauge lines.

Looking now at **fig. 6**; it will be seen that there is little danger of sawing too deep because the waste should drop off when the previous cut is reached.

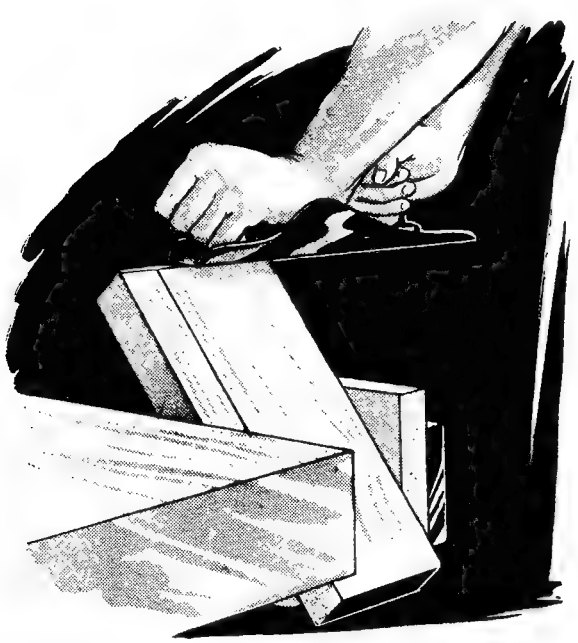
When setting out halvings, make a practice of marking the waste and so avoid spoiling joints by sawing them "in reverse."

The mitre box in **fig. 5** is an ambitious project for the beginner, because it must be accurate or it is useless. The suggestion here is that one should buy 4 ft. 6 in. of 4 in. x ⅞ in. seasoned hardwood and get the help of a carpenter for the cuts, which are made after the box is assembled. If making the cuts yourself, stop immediately the saw tends to run from the line and turn the box round. Cutting from the other side will correct the error.

Extension pieces and stops tacked in the bottom of a mitre box will add to its usefulness. If such a job as a splayed plinth has to be sawn, it can be packed to position as in **fig. 7**, and the cut will be correct.

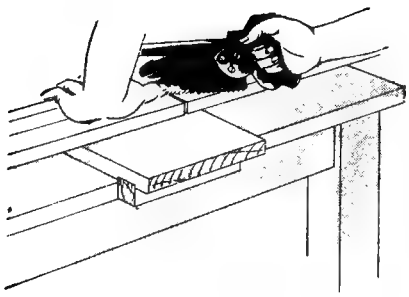
As much of our work will consist of boring holes, we need a jig or two for that purpose. The simplest for end grain is a block to steady the bit shank whilst the work is cramped to the table. The guide lath cramped on top will show any deviation sidewise and the supporting block can also be cramped to the table to act as a depth stop.

"But suppose I have no cramps?" says someone. In that case the lath must be tacked on and an assistant co-opted to hold the work. Holes in edges can be bored as in **fig. 9**, where two pieces have been connected to make them

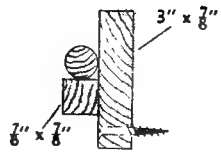


This method of holding in the vice a short board that has to be chamfered enables the worker to watch the effect of the plane cuts. A waste piece cramped behind prevents the edge breaking. When chamfering a board all round, tackle the end again first.

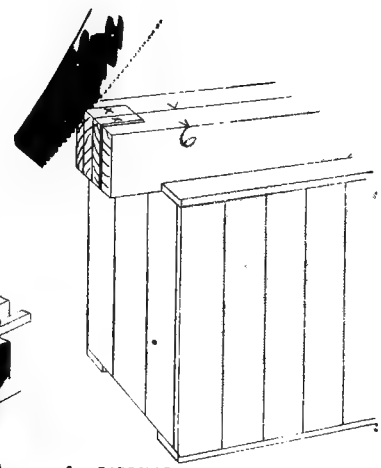
Details of Simple Tools and Guides



1 **SAWING TO LENGTH—**
Test the saw in a waste piece, then mark two lines for each cut.



2 **A SAWING BLOCK FOR DOWELS—**
It may be screwed to a box or cramped in a vice.



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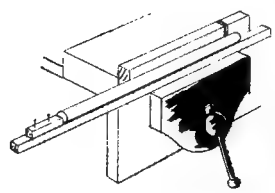
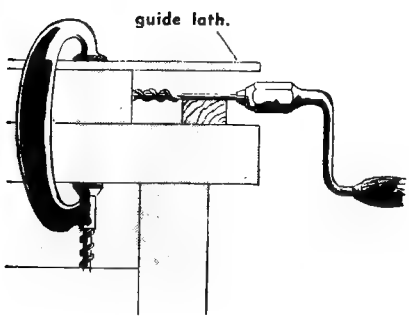
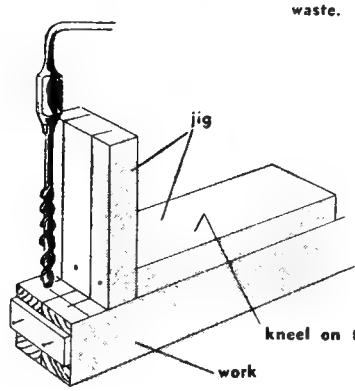


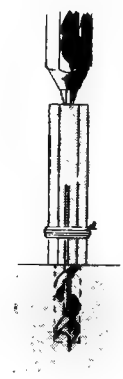
4 **RIPPING HALVINGS—**
The saw kerf will be in the waste. Note the crosses.



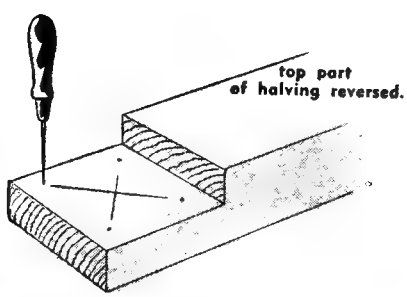
8 **SIMPLEST BORING JIG**
Cramp the work to a bench or table. Steady the bit shank on a block.



9 **BORING ON THE FLOOR**
Make a jig like this and kneel on it. The upright serves as a depth stop. A tilted piece will serve for skew boring.

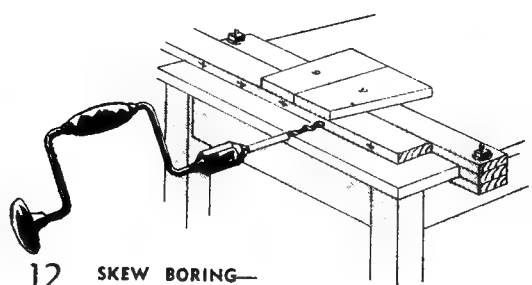


10 **DEPTH STOP—**
Bore from both ends of a waste piece. Saw kerf is closed with a wire twitch.

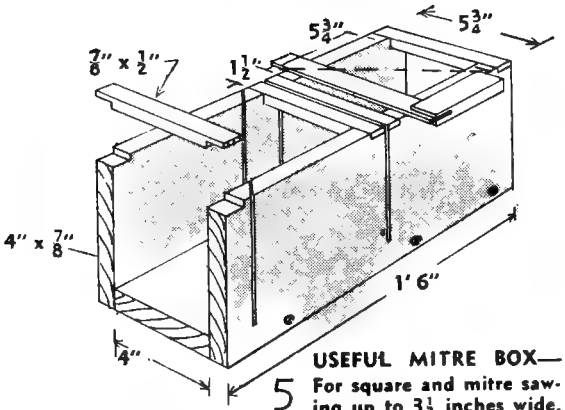


11 **11 DRAW SCREWING**

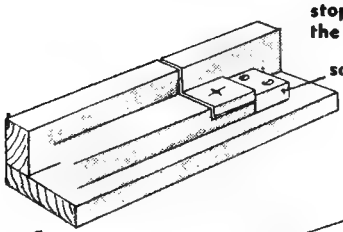
Mark from holes in other halving, then bore 1/16" nearer the shoulder. This will pull up the joint.



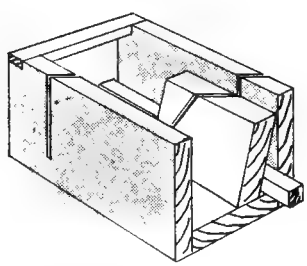
12 **SKEW BORING—**
Work is slid along under the guide. Depth stop hits end of table.



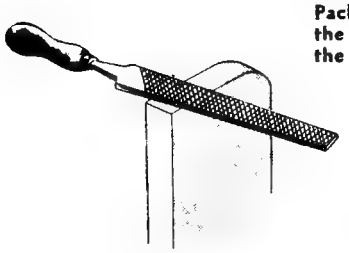
5 **USEFUL MITRE BOX—**
For square and mitre sawing up to 3½ inches wide. Extension boards and stops may be tacked in the bottom.



6 **SHOULDERING HALVINGS—**
If pieces have been sawn to exact lengths, a stop will locate the shoulders.



7 **MITRING A TILTED PIECE—**
Pack to correct pitch in the mitre box. Saw from the face.



13 **FILING END GRAIN—**
The cut is diagonal. File forward and across the work.

14 **RIGHT GRIP FOR A SPOKESHAVE—**
Forefingers and thumbs as shown. Remaining fingers will dispose themselves. Hollow the wrists.

more stable and the workman holds the guide in place with his knee. The upright guide stops the bit at the right depth. A similar guide could be made at an angle suitable for boring on the skew.

To make the depth stop—**fig. 10** — mark diagonal lines across each end of a waste piece, prick the centre points with a nail and bore until the holes meet in the middle. Then pare off the corners to make it less bulky. A saw cut, and a wire twitch to close it, will prevent its sliding down the bit when in use.

Turning back to the matter of handling jobs without cramps, **fig. 12** shows a jig which will serve for straight or oblique boring. A batten with short blocks bolted to the ends can be slid on from the end of the table and held where required. The board on top shows direction and steadies the work. It could, if necessary, have a lath tacked on top as a guide for boring at right angles to the edge.

Always prick centre points with a nail to give the bit an exact location.

A hint on assembling—illustrated in **fig. 11** —is to drill the underside of a screwed halving first (with holes a slack fit for screw shanks) and mark through these holes to the other half.

If centres are marked as shown for the top piece and holes bored a tight fit for the thread, the screws will draw the shoulders together. Not more than a sixteenth of an inch is needed. Too much "draw" will defeat its own object.

When mixing casein glue measure 1½ parts water to 1 part glue and on no account use a tin container or the mixture will stain the work. First pour the water into an earthenware or an enamelled container, then pour in all the glue at once and stir quickly. At first it will appear too thick but will thin down in twenty minutes or so and be ready for use.

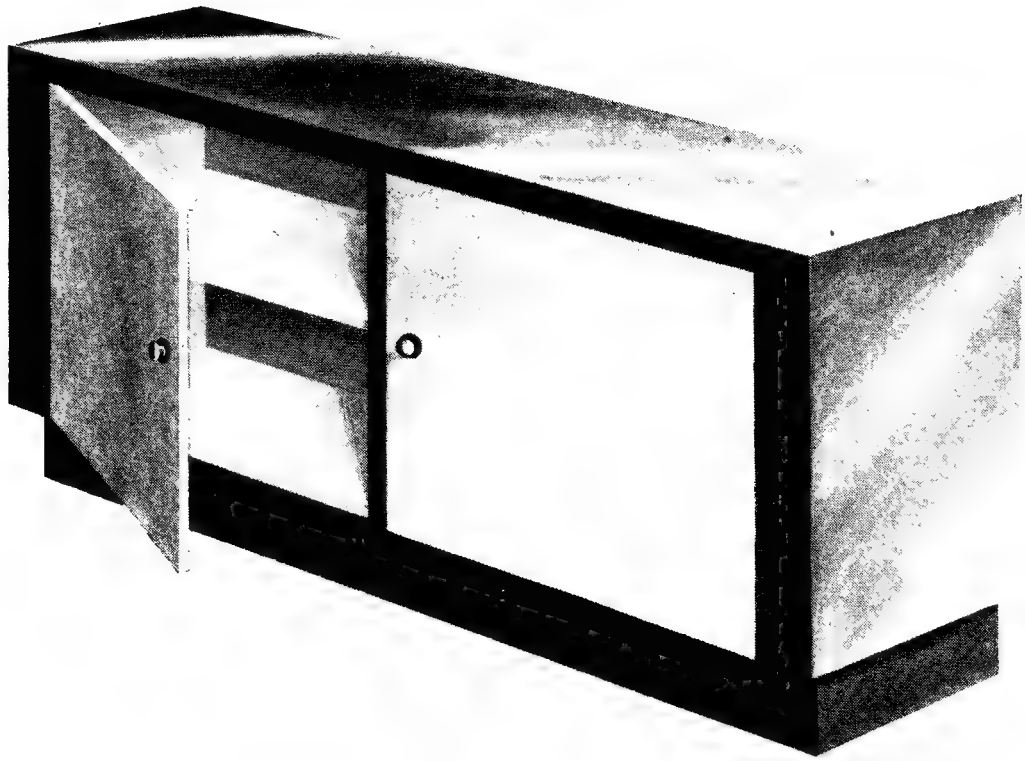
Glue all adjacent surfaces, shoulders and cheeks of halvings, inside dowel holes, and the dowel ends themselves; and wipe off surplus glue at once. In assembling a job sight across chair frames and the like for twist, and correct it before laying aside.

Figs. 13 and 14 deal with cleaning up and shaping. If the end of a chair back is to be finished with a file, avoid breakage by sawing off the corner first. Strokes at right angles to the face will leave an end rough. By filing diagonally, as shown, it is possible to make a slicing cut which will finish the end flat and shining.

Now for our friend the spokeshave. Anyone who has handled a lawn mower or a vacuum cleaner knows that there is a particular angle at which they will attain maximum cut or suction, and that it is possible by starting at a low position and raising the handle to feel the actual instant when either becomes effective as the machine moves forward.

The same is true of a spokeshave. Grip it as shown in our sketch, let the remaining fingers dispose themselves around the handles and hollow the wrists. Then gradually raise the tool and gently move forward until it bites. In concave work the thumbs press downward and forward. In convex work the index fingers do the same.

FLUSH DOORS FOR CUPBOARDS



A FLUSH DOOR IS ONE in which the panel is not recessed but is "plain all over." Housewives and handymen unite in blessing the man who devised the flush cupboard door. It is easier to make and much easier to keep clean.

In either case the chief element of the door is the frame, and as its finish is not as important as if it were visible, our main aim must be to produce something strong, square and out of twist, so that its covering may have maximum grip and lie quite flat.

In shops where kitchen cabinets are made the corrugated fastener or "wiggle nail"—**fig. 2**—is a constant stand-by. The grip of this device is surprising, as I found when trying to pull apart some joints I made for demonstration a little while ago, but the trouble often is that insufficient care is taken when squaring up the joints themselves. There is no need to plane rail ends, but they should be sawn in a box or other device which will ensure 90 degree angles in both directions.

When driving the nails see that the joint is solidly over the cramp, use a medium weight hammer and distribute light blows evenly.

Corrugated nails should not be placed square across joints but diagonally, and, when only one side of a frame is to be covered, the ply should not be over the nails or it will pull the other side of the joint open.

Jobs to be covered on one side only—**fig. 3**—should have frames ¾ in. or ⅞ in. thick, but ⅝ in. thickness is enough for doors covered on both sides. In this case the nails should be punched and frame surfaces dressed level before being roughened with a toothing plane or a rasp to give better grip for glue, then frame and panel are both glued, and the latter fixed with half-inch brads about four inches apart along the edges or left under pressure without nails to set, for polished work.

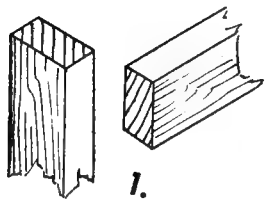
Thin frames covered on one side only are likely to twist.

Figs. 5 to 8 show how dowels can be used. In this case again there is no waste length on the frame stuff. Every piece is sawn to exact length, and of several methods of setting out probably that in **fig. 5** is the simplest. A complete frame of ⅞ in. material is cramped together and centre lines for ⅜ in. dowels squared across the joints. I usually allow thickness of dowel plus ⅛ in. from end of stile to first centre line and place the other dowel similarly, then the pieces are separated, and gauged along the centres from the face sides. The joint in **fig. 6** would be the opposite hand to that in **fig. 5**, but shows the gauging more conveniently than its fellow.

Use a guide and a depth stop when boring for dowels about an inch deep in each piece, then counter-sink the dowel holes to allow for surplus glue and glue inside the holes with a small brush or a stick before gluing and cramping the joints themselves.

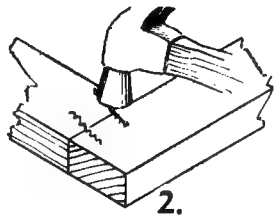
The reason for driving dowels in stiles first is to gain the maximum grip by driving right

Details of Flush Doors for Cupboards



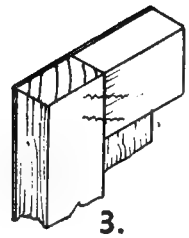
1.

ends and edges are "squared" to exact sizes



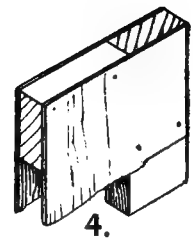
2.

joints are glued, cramped, & fixed with wiggle nails.



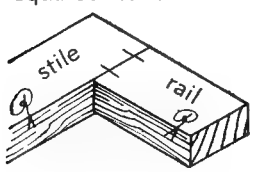
3.

plywood is glued & bradded to one side,



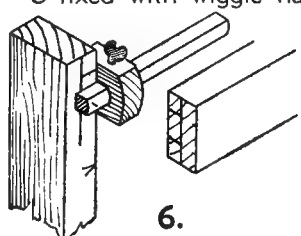
4.

or to both for a better class job.



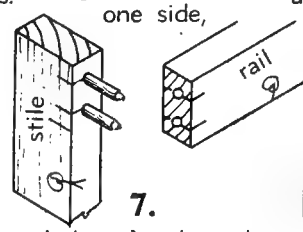
5.

a frame may be cramped up and marked for dowels.



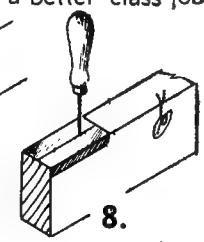
6.

the marks are squared over and centre gauged.



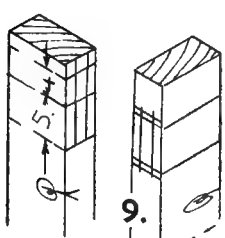
7.

holes, dowels and joints are glued & cramped.



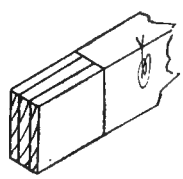
8.

centre may be marked to template.



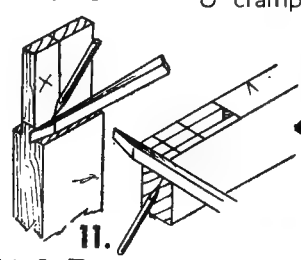
9.

haunched mortises are set out on the stiles.



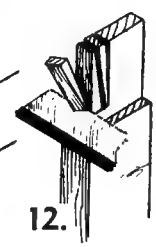
10.

and a plain tenon on each rail.

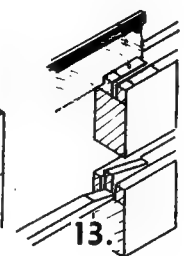


11.

M & T are cut and haunch depth marked.

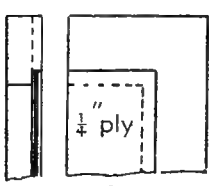


12.



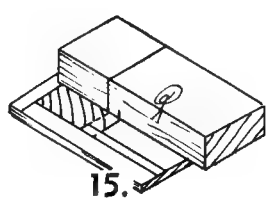
13.

wedges are sawn from haunch. Haunching chips out from end.



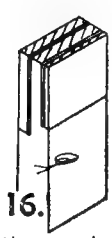
14.

for rebated panels with square edges.



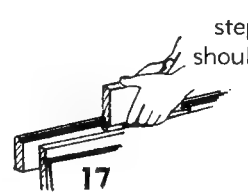
15.

set out shoulders from a drawing.

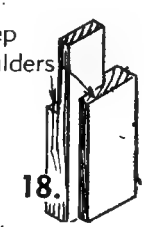


16.

mortise as before and rip the tenons.

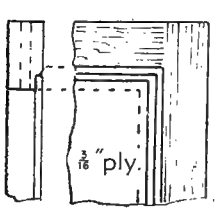


17



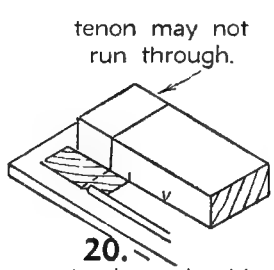
18.

then rebate all the pieces, and saw the "step-shoulders" last



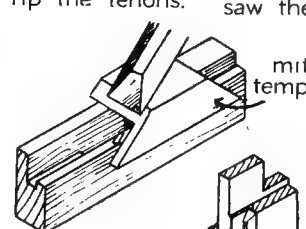
19.

for thin panels with veed margins the tenon can be central.



20.

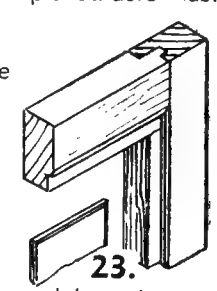
the long shoulder will finish on the chamfer line. Not on the Rebate.



21.

the chamfers must be mitred. The haunch may be as above or as shown in fig. 18.

22.



23.

and here is a corner of a door ready for its panel

to the bottom of the holes. In narrow stiles where dowel length cannot be more than ⅝ in. or ¾ in. this is very important, and any clearance required can easily be provided by boring an extra ⅛ in. into the rails.

When preparing a number of frames it is better to cramp a group of members together and set out all at once or a tin template may be used as in **fig. 8** on stiles and rails.

Besides nailed and dowelled joints there are several kinds of mortise and tenon which find favor because they can be wedged up. **Fig. 9** illustrates the simplest form with a central tenon and shoulders of equal length.

Fig. 11 shows that only portion of the tenon runs right through the stile, the remainder being shortened so that sufficient timber can be left intact on the stile to prevent the tenon from slipping out endwise. This shortened portion is called the haunch, the shallow recess for it is known as the haunching, and general proportions for the joint are thickness of mortise one-third thickness of stile, or the nearest chisel to it, say, 5/16 in. in ⅞ in stuff; width of mortise five-ninths width of rail; width of haunching four-ninths width of rail; depth of haunching equal to thickness of mortise.

These proportions are often varied to suit special cases, and the mortise is not always placed in the centre of an edge, but generally the setting out is as shown in 9, for faces and back edges of a stile with wedge allowance of about ⅛in. on each side of the mortise.

Fig. 11 shows how both haunch and haunching can be marked with the mortise chisel after the mortise has been sunk from both sides and cleaned out, then wedges are sawn while the rail is upright in the vice and the haunching, instead of being sunk in small chips, is sawn and lifted out from the end.

All the frames so far described are to be completely covered with plywood, which will be planed flush along the edges. In painted work uncovered ply edges are not important if the ply is of good quality and securely fixed, but there are many situations where the panel is required to contrast with its frame, and visible edges of plywood are unsuitable, therefore, some form of rebated frame must be used.

Fig. 14 illustrates such a case and shows how some complication in the joint can be avoided by placing one side of the mortise alongside the rebate. Because of the rebating one shoulder will need to be longer than the other, and though in workshops men often call these "off and on shoulders," I think the term is clumsy and much prefer one which I saw in an American magazine, and have used for some time, namely, "step shoulders," because the latter at once gives the idea of the "step" from one shoulder to the other, which the job requires.

All step-shouldered jobs should be set out from sectional drawings—**fig. 15**—which give exact lengths for back and front. Tenon width is as shown for the plain job described above and set out of mortising will be as **fig. 9**, except that the front edge of the mortise will now be a full quarter inch from the face of the stile instead of in the centre.

When all mortises are sunk and the tenons ripped in lengthwise the rebating can be done with a fillester or a rebate plane with a guide strip nailed along its sole, after the rebate lines have been deeply gauged to minimise risk of tearing the grain in bad spots. Shoulders are sawn last, and when the job is glued up it can be cleaned off flat ready for the panel.

Fitting the latter is work that calls for very sharp tools and care right from the start. Test the rebate for square angles, then saw the panel a sixteenth of an inch full all round, and shoot to width, afterwards fitting the top and bottom with just the least shade of undercut to get the edges in.

If too much undercut is used it may look right at first, but will show a line afterwards when the joints are cleaned off with scraper and sandpaper. Panel edges are glued and bradded just as before, but only the finest of punches must be used, so that the polisher may be able to fill the holes almost perfectly. Our final example introduces, not only a rebate, but a bevel or chamfer, which is to be matched by a similar one on the panel so that the two form a "vee" joint.

Fig. 20 illustrates a point often overlooked in setting out shoulders, namely, that in moulded work the correct shoulder line is at the intersection of the flat surfaces, or, in other words, the step between shoulders on this job must include the chamfer as well as the rebate.

The novice carpenter should mortise and tenon two spare pieces of timber and try the joint before making frames.

When mortise and tenon are prepared the chamfers are fitted by paring them along a mitre template and will appear as in **figs. 21 and 22.** If ¼ in. plywood is to be used the tenon could be alongside the rebate to simplify the joint a little, but with 3-16 in. plywood the tenon is better kept in the centre of the stuff as shown. Also as so much of the stile has already been cut away the haunching should only be about 3-16 in. long or it may be dispensed with entirely as in **fig. 18.**

The tenon in this last example is shortened or "stumped" and will not show on frame edges. Its strength will depend entirely on good fitting and strong, clean glue.

Nail Points

When starting to saw, the correct and safe place for a workman's left hand is in use as a guide for the saw. The blade can rest against his thumb-nail.

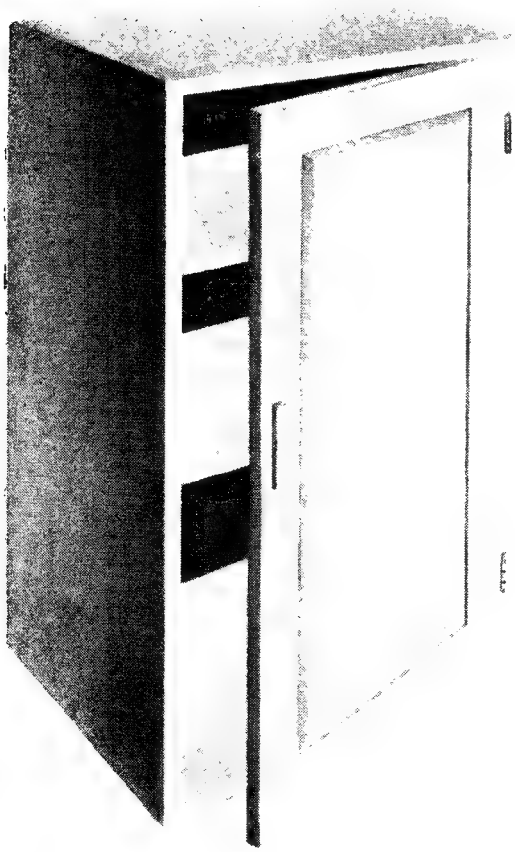
An excellent bit for boring short holes in hard wood, without splitting, can be made from a 2in. or 3in. nail filed to a square section "point." This will save numbers of "nail bits" when boring red gum fence struts.

The wedge shaped point of a nail is likely to split a thin piece of hardwood. It often pays to clip off brad points or bore for them with a square ended bradawl.

It is often the nail head which splits the end of a weatherboard. Countersink a spot with the nail head before inserting its point.

Driving a nail into a fitting that springs is very unsatisfactory. Hold another hammer or solid weight behind the blow.

HANGING SMALL DOORS



SEVERAL TRAPS AWAIT the fellow who tackles haphazardly the job of fitting hinges, catches and handles to a small door and tries to hang it. But anyone who studies and adopts the correct methods set out here will save considerable time and make a job of it.

Working by guesswork a fellow may choose poor positions for the hinges, sink them too deeply and make the door "hinge bound," or find, when the trial swing is made, that both bottom rail and closing stile are rubbing on the carcase instead of sliding snugly into place. As a typical example of this work I have shown a handy little cabinet which can be dovetailed together and fitted with one or two shelves housed into the sides.

The door in this case would need to fit very neatly and be set back 1-16 in. from the face of the carcase, thus showing a definite margin which is far more effective than if all surfaces were set flush.

Before beginning to fit, test the diagonals of the carcase, then, if these agree, shoot the hanging stile of the door straight and the top rail square to it, taking as little off as possible —**fig. 1.** If the carcase is not square, note the amount of error and draw a line on the rail before shooting. Guessing takes time and is unsatisfactory.

Now measure the width of opening near top and bottom of the carcase, transfer to the door and then mark the height in similar fashion. The marking will now appear as in **fig. 2,** and the only time when one would need to alter this procedure would be in handling a door that through error had been made too wide for the carcase. In that case the workman would be aware of the fact and would so mark his door that half the waste would be taken off each stile.

Fig. 3 shows why the horns should not be sawn off before marking correct height, for, handled in the manner shown, it is easy to make a clean saw cut through the cross grain and finish by planing, whereas a shorter horn would make the operation more difficult.

At this stage it will be possible to lay the door in position and note if it is a snug fit before taking the final shavings to give clearance, which on this class of work need not be more than one thirty-second of an inch on each edge; it being customary also to give the edges a slight inward bevel so that they will not catch in closing.

Probably the best position for hinges is about ¼ in. away from end grain of tenons as in **fig 10,** where there is opportunity for clean cutting into side grain whilst, at the same time, approximating closely to the general line of the rails in elevation. Light pencil marks across both door and jamb can be made with a hinge as shown from which chisel-cut lines can later be squared off as in **figs. 8 and 9.**

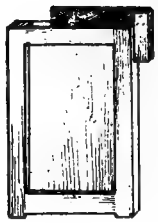
If a workman were handling a series of these jobs he would now set three gauges, two for the door and the third for the jamb, or side, of the carcase. On first consideration it would seem that the settings shown in **figs. 6 and 7** would fulfil requirements, but if only these two were used the finished door would stand flush with the edge of its frame and the slightest variation in clearance or error in fitting would be at once apparent.

To avoid this, many doors and drawers are set back a little from the face, as in "A," with the result that the frame shows a definite margin very pleasing to the eye, and if anyone doubts the improved appearance gained by this adjustment let him examine any ordinary drawer in the two positions and note the difference. Returning, after this very necessary digression, to the actual setting of gauges it can now be said that 1-16in. back is sufficient for small doors, and as small butt hinges usually have centre pins ⅛in. in diameter, an easy way to make the allowance is to set one gauge to the side of the pin and another to the centre—**figs. 5 and 7**—this giving the smallest possible hinge-projection if the door is to open through more than a right angle.

Comparison of a bedroom door with that of a wardrobe will probably show that whereas in the former, half the hinge thickness is housed into door and jamb respectively, the whole thickness shows on the door of the wardrobe.

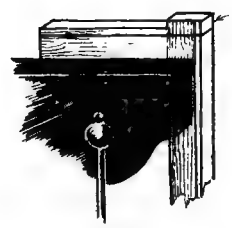
The reason is, that entrance doors are usually finished with architraves, which to some extent

Details of Hanging Small Doors

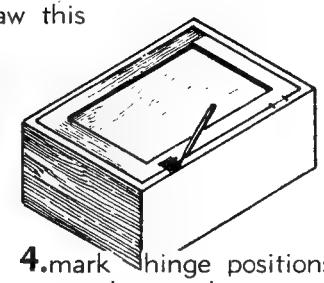


1. shoot hanging stile and top rail.

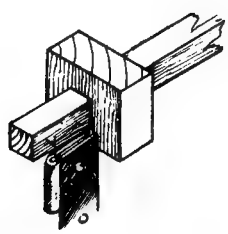
2. mark height and width of opening.

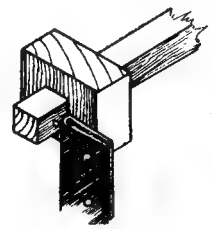


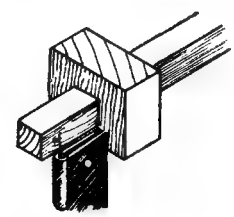
3 saw horns and shoot to size

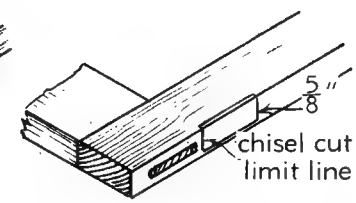


4. mark hinge positions on door and carcase.

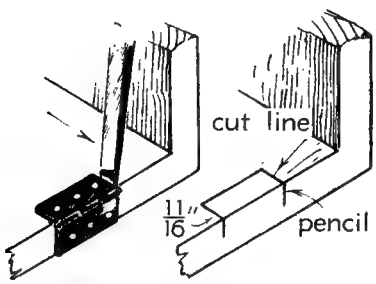




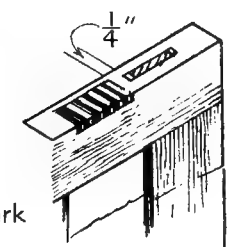




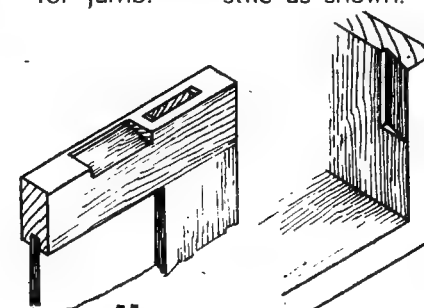
5. set one gauge to edge of pin — for door — **6.** another to bare thickness of hinge **7.** and a third to centre of pin — for jamb. **8.** gauge the door stile as shown.



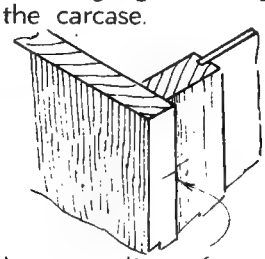
9. mark and gauge housings on the carcase.



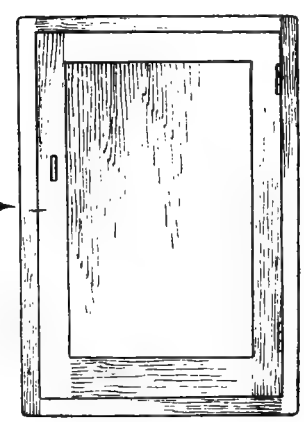
10. saw waste into 1/8" pieces to prevent running with grain.

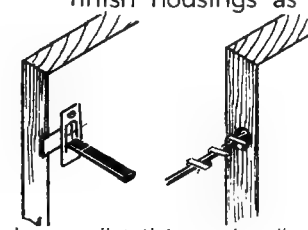


11. pare out all waste and finish housings as shown.

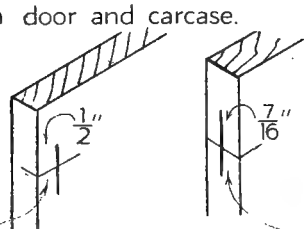


A. mark centre line of catch on door and carcase.

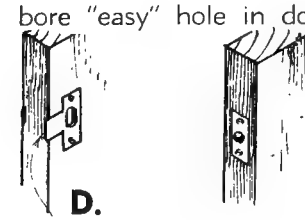




C. house "striking plate" and mortise waste. bore "easy" hole in door.



B. gauge half thickness on door and 1/16" more on jamb.



D. file off surplus striking plate. house ball-plate and screw on.

A HANDY CABINET
18" x 12" x 8" inside

A. TO D. FIXING A BALL CATCH

hide the hinge projection, but in furniture a more pleasing effect is gained by leaving a continuous joint line instead of cutting into the jamb.

The objection to this, if no other steps were taken, would be the supporting of a heavy door by means of screws only, but in all but the cheapest work this is overcome by fitting the hinge on the slant, as in **fig. 11.** Apart altogether from the question of weight-carrying, it is probably worth while to adopt this method even with small hinges such as we are considering for, marked out as described above, the location of the door when screwing the hinges is more definite than if one were working to pencil marks alone. The depth on inside of housings is equal to one flange and is usually a matter of judgment, but in cases where flange width is equal to thickness of door it is better to set another gauge and mark the inner edge definitely than to attempt the job by guesswork.

When actually sinking the housings it is seldom that a workman takes the waste out in a single slice, for there is always danger of the cut running with the grain and finishing below the gauge line. Usually it is sawn or chopped as in **fig. 10** and the final paring made along the marks to finish as in **11.**

Two causes of trouble with hinges are unsuitable screws and housings that are too deep. The remedy for the first is to countersink the screwholes, and an age-old dodge in the latter case is to fit a piece of sandpaper behind the hinge and trim it off with a chisel after screwing.

Diagrams A to D illustrate the fitting of a common ball catch, another job which is only easy if tackled methodically. The procedure is as follows:—First mark a position clear of the handle and square the line across edge of door and jamb.—Diags. A and B.—Assuming the door to be $\frac{7}{8}$in. thick, set one gauge to 7-16in. and another to $\frac{1}{2}$in., thus making allowance for recessing of door as described above and gauge as in B. In my opinion it is a mistake at this stage to mark the housing from the plate and sink it, as is often done. It is better to sink the plate in position, screw it on, and mortise the waste afterward, for by working in this order there is little danger of breaking away the screwhold. If the catch itself is provided with a plate, measure the thickest part of the barrel and bore a hole into which it will slide easily, then slip the catch into position, mark the edges with a knife, and house the plate in flush. In some patterns no screwing plate is attached to the barrel and it is then necessary to bore a shallow sinking for the rim before preparing for the barrel itself, but the factor chiefly making for success in either case is to take care in marking the centres and, if necessary, start the point of the bit with a bradawl. Usually the hole in the striking plate is slightly longer than its width to allow for subsequent dropping of the door if that should take place.

These, then, are a few simple instructions which may be applied to a wide range of jobs. The measurements given are, of course, only approximate, and will vary according to the size of fittings in use, but where there is any doubt as to clearance required it is always better to make a trial on a couple of waste blocks than to experiment on a door which may later have to be patched up by the polisher.

SAWS FOR SAWYERS

Top illustration shows how a board can be held steady for sawing on the bench drawer with its end tucked under the bench top.

In the lower one the left hand supports the off-cut to prevent breakage at the finish.

Seventeen Steps to a Dovetailed Box

THE SECRET OF DOVETAILING is care right from the start. If the seventeen steps explained in this article are taken carefully, the student will have mounted the first flight to successful dovetailing. There are higher flights leading to secret-, mitre- and lap-dovetailing but once the lesson here given is mastered, their ascent is easier. The best way to learn is to take a couple of spare pieces and try the 17 steps on them to make one corner before trying to handle four sides together.

When one has the knack of making a neat fit, however, it is fatal to tinker with one corner at a time for somewhere in the job a set of sockets may be sawn "inside out" and the workman is then in a tangle.

The first step is to mark definitely "insides" and adjacent pieces. I consider the system indicated in figs. 1 and 2 is superior to orthodox face-marking, because it shows at once which ends come together and which faces are inside.

Bottom edges instead of top ones are marked to conform with the practice in making drawers, where the lower or running edge is the more important and is the edge to which the workman must set out.

Having selected four pieces of 5/16in. stuff for the sides of the box, stand them edge up on the bench and note whether or not the grain matches around the sides for good appearance. Then mark triangles about an inch from the ends and plainly print corresponding numbers for each pair.

Pencil lines are useless for marking the exact lengths we now need. Cramp the four pieces together and mark with a chisel or a knife. The lines will not only be finer than if drawn with a pencil, but they will also minimise the danger of breakage when the ends are being shot square.

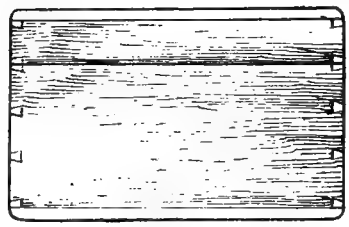
On jobs that are to be painted, it is customary to tack the pieces in pairs and shoot them together, and in any case they should be compared before laying aside. On a polished box, however, the brad holes will show unless positions of dovetails are ascertained and the brads driven through waste portions that will later be cut out.

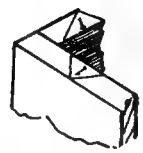
With all four pieces shot square, along and across their ends, a gauge is set to 5/16in. or whatever thickness the timber may be, and marked all around each end. Then an angle of one-in-five is set out on a spare piece of board and a bevel set to it for marking the sockets.

Just a word about the gauge. It should be sharp and preferably have a knife-like point. Its purpose here is not only to mark distance, but to give a definite finishing line for the paring chisel later. Gauge lines must not be deep.

In setting the bevel, set its stock about the middle of the blade, so that it can be used in either direction. Having marked out the front of the box with measurements taken from fig. 7 apply the bevel as at 8, and mark out the sockets on both ends of this piece only, taking care that the wide dovetail is near the top edge.

An eighth of an inch is about correct for the narrow end of a common dovetail in this class of





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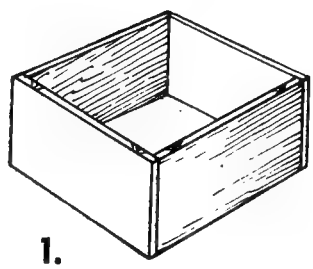

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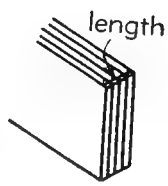

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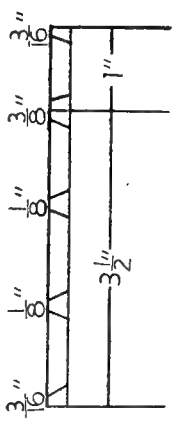
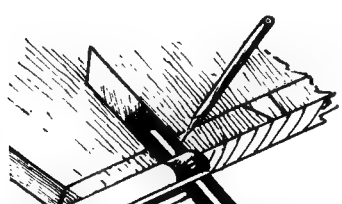


7. spacing for sockets



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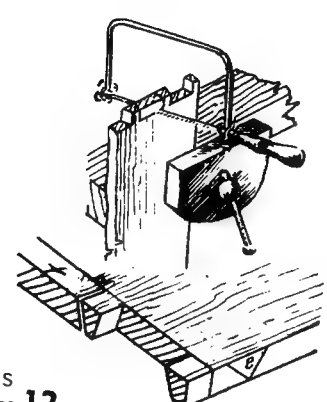

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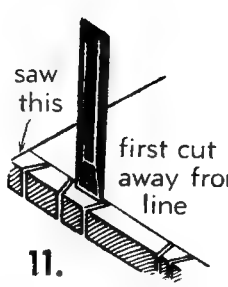
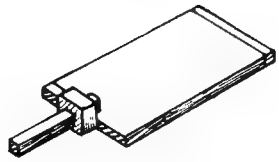


11.

Details of Seventeen Steps to a Dovetailed Box



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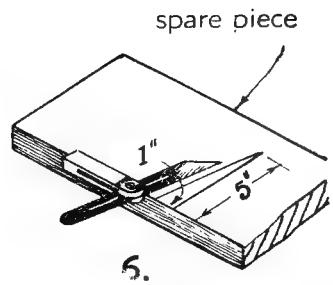

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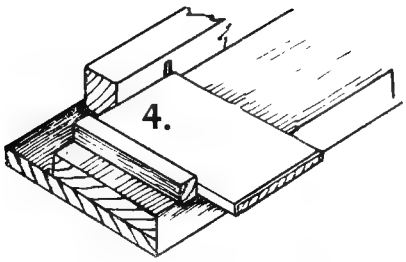

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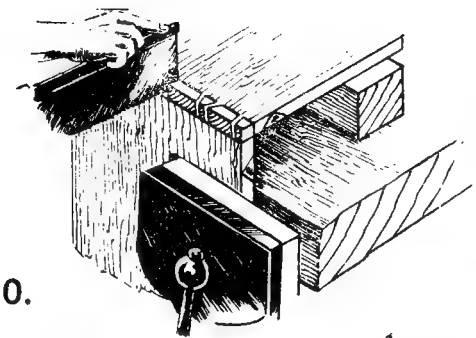

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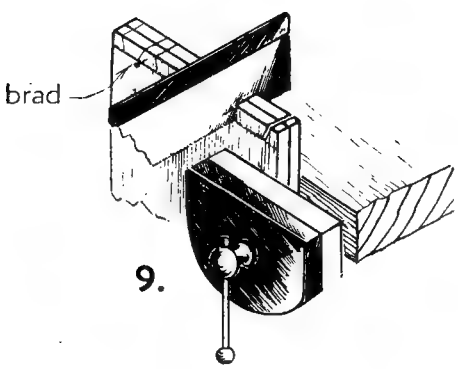

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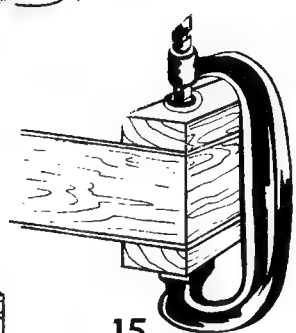

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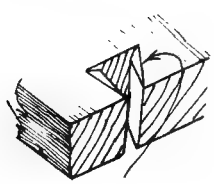

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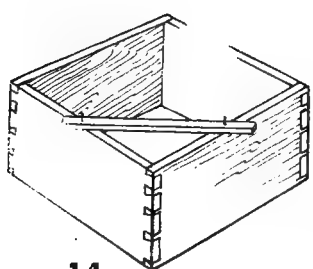

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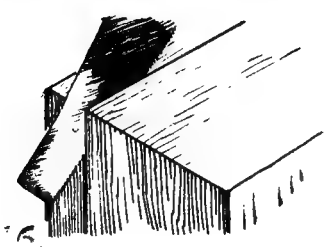

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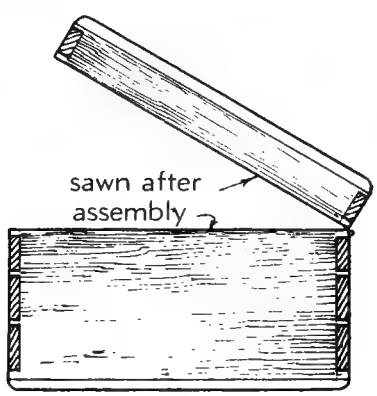


17.

work and it will be seen that when top and bottom edges are finally cleaned up, and the lid sawn, the dovetails will finish about the same size.

A useful guide for spacing sockets is to set out a sample similar to the centre one shown, and measure its width on the gauge line. If it were, for example, 3/8in. wide, then the maximum spaceing of sockets in that range should not exceed five times 3/8in. (1 7/8in.).

This gives us an easily remembered rule for dovetail (angle one-in-five):—Dovetail spacing not to be more than five times the thickest part of the sample pin. This, though often varied, is adequate for general purposes.

In this job three sockets have fixed positions and it remains only to determine the other two. The handiest method is to measure the distance from the lid socket to the bottom one, deduct two-eighths for the two socket openings and divide the remaining space by three, which will give the distance from socket to socket along the edge of the stuff.

As front and back are identical they can be tacked together through the waste and sawn in one operation after the socket lines have been squared over. Then, before any waste is removed from the sockets, front and back are separated and pin positions marked with the same saw.

Fig. 10 shows that the saw is INSIDE the socket when the mark is made. Therefore, that mark itself will have to be left on the pin when it is being sawn and should show inside the socket when the joint is assembled.

It is in just skimming this mark that practice counts. Work in a good light, and do not let the attention wander for even a second or the fit will be slack and the carelessness obvious even to a casual observer.

Before removing waste from either pins or sockets mark it with a cross, then start away from the line and work back with fine cuts until exactly on the mark.

Allow nothing. Work from both sides with a chisel that is finely ground and sharp or it will break the grain instead of finishing to a clean edge.

Many beginners make the mistake of undercutting such an end as fig. 12 instead of aiming to make it square; the object being to show clean lines on both faces. This may appear correct when first assembled but, during subsequent planing of the faces, the sharp edges of the joint will be cut away and black lines will show where the undercut was filled with glue.

Clean up inside faces before assembly, but take nothing off the pins or they will be reduced and the fit spoiled. If the job has been kept tolerably clean, a light sandpapering will be sufficient.

One of the difficulties about assembling dovetails is the danger of bruising when ends of pins meet sockets. This can be overcome by easing the inside of the latter with a chisel. Note that the bottom of the socket is not eased but only the sides. Just a little is sufficient for easy entry before the joint is glued and driven up with a hammer and a spare piece of lath held right over the dovetails.

Thin hot glue should be brushed on all pins, sockets and adjoining surfaces before the job is quickly knocked together, squared, and, if necessary, cramped. Then brace it and leave it to set before fixing top and bottom.

If fixed as in fig. 15, glue will be sufficient to hold them, and a day or so later the surfaces can be cleaned up and practically finished. The lid portion is then sawn off between two gauge lines, 1/16in. apart. These lines will show if the saw begins to wander.

If any difficulty is experienced in fitting edges after sawing, tack a sheet of No. 2 sandpaper on a flat board and rub box and lid in turn in a circular direction. This will adjust the joint, after which the box can be fitted with one inch brass hinges, an inch from each end, and a good quality catch.

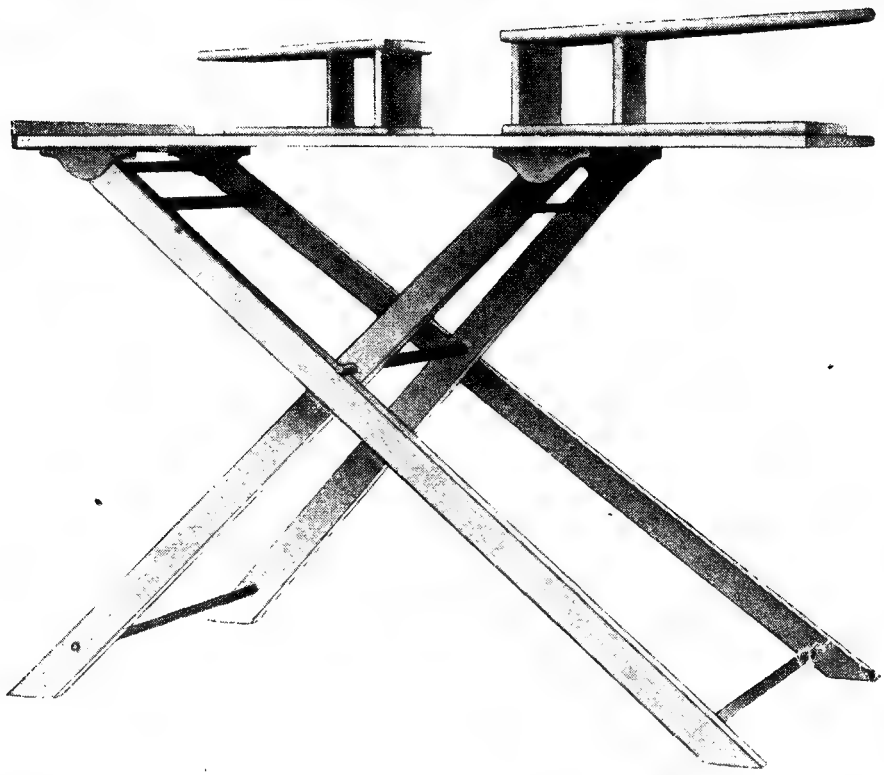
The seventeen steps to a Dovetail Box are:

1. **Match the grain; hold pieces together bottom edge up.**
2. **Number each pair at the corners.**
3. **Mark exact length on all pieces with cut lines.**
4. **Plane to length on a shooting board.**
5. **Gauge to suit thickness of material from all ends.**
6. **Set a bevel to the angle of one in five.**
7. **Decide on the number of dovetails.**
8. **Mark out with a bevel (sockets only).**
9. **Tack sides together and saw the sockets.**
10. **Mark from sockets to pins with the same saw.**
11. **Cut out socket waste with a thin, sharp chisel.**
12. **Saw or chop out waste between pins. Do not undercut.**
13. **Slightly ease inside faces of sockets.**
14. **Glue up, brace square, and leave to set.**
15. **Clean off the edges. Glue on the top and bottom.**
16. **Clean up. Round top edges and saw the lid.**
17. **Fix 1in. narrow brass butt hinges and a catch.**

A jarrah "striking bottom" has saved many a plane from destruction. Bore a 1in. diameter hole in. into your jack plane, and glue a button in. It should project ½in., and be rounded off.

After a board has been smoothed for polishing, it should be damped on both sides, left to dry, and afterwards finished with fine sandpaper. (Work WITH the grain).

IRONING TABLE AND SLEEVE BOARD



THE PORTABLE IRONING BOARD is intended to pack into the holiday suitcase alongside one of the small electric irons sold for the same purpose and although a lightweight it is surprisingly strong and will handle a good range of frills and furbelows. It may, if considered more suitable, be made longer than shown here, but the top should not overhang the base more than four inches and the limit will be, of course, the length of the suitcase.

The board in the picture was made from a 3ft. 6in. length of 5in. x ½in. maple, but Kauri or white pine will serve just as well and by studying **figs. 2 and 3** the folding action will be understood and we can proceed to set out the top—**fig. 1**—for hinge position and the mortise on which the rigidity of the job will depend. All setting out should be done before shaping so that marks may be transferred exactly to the base, then, working across grain, the mortise may be sunk 5/16in. deep and the hinge screwed underneath the top.

The back is only 4in. wide to clear rounded edges on top and bottom and the post 2in. to fit exactly into the mortise. The top of the post will need a slight taper to allow it to enter without bruising the edges and to fit tightly when given a sharp hand tap.

Three 1½in. brass butt hinges with half inch screws will be needed and as screwing is otherwise somewhat awkward it is best to leave the outside bottom hinge until last and make sure that all screwholes are marked from a hinge and pricked in beforehand.

Corners shown square in **figs. 1 and 4** will be marked with a penny for rounding, then spokeshaved to shape before lightly chamfering all edges in preparation for rounding these also and finishing with sandpaper.

THE SLEEVE BOARD

Whilst on the subject we may as well deal with the more solid sleeve board detailed in **figs. 10 to 13.** A 4 ft. length of 5in. x ⅞in. Kauri or hoop pine with a 5in. x 2in. x ⅞in. post from scrap will be sufficient, and to make a really strong job both back and post should be tenoned and shouldered to fit mortises as shown. If base and top are set out together and holes bored half an inch deep

QUANTITIES FOR IRONING TABLE

Item	Size in. in.	Material	No.	Length ft. in.	Details
Legs	1⅞ x ⅞	Hardwood	2	4 9	Dressed four sides
			2	3 7	
Top	15 x ⅞	Kauri or White Pine	1	4 6	
Rails	¾ Diam.	Hardwood	1	1 3½	To long legs
			1	1 0½	
			1	0 11¼	
			1	1 1½	To short legs
			1	1 1¾	
			1	0 9¼	
Clamps	2½ x ⅞	Hardwood	1	1 3	Grooved 5/16 in. deep
	1½ x ⅞	Hardwood	1	0 10	Slot screwed

Brackets from top waste.
Pivots from a 2 ft. length of steel rod or conduit.

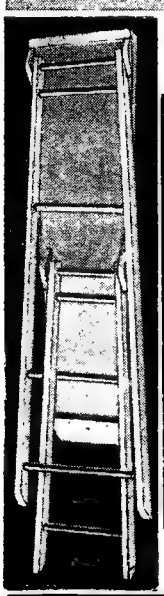
there will be no difficulty in cleaning out the mortises. Back and post are also set out and shouldered together in the vice and before any shaping is done it pays to assemble the job and note all correct.

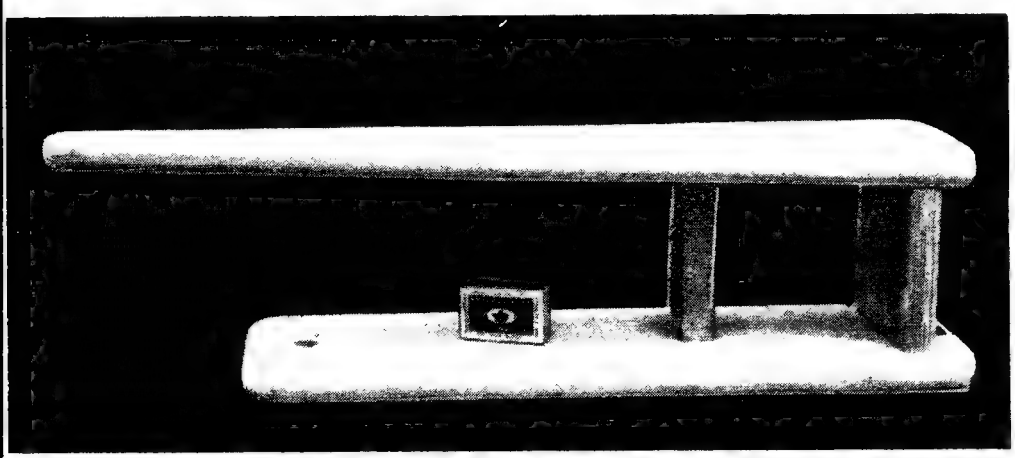
Shouldering of post and back will allow for edges of both to be rounded without affecting their fit in the mortises and when shaped up they can be well glued, cramped up in the jaws of the vice and if necessary reinforced by nailing through top and bottom. Making a trial assembly as described allows for any adjustment that may be necessary and leaves rounding and cleaning up to be done when risk of marking the work is past.

THE FOLDING TABLE

Among the many designs for folding ironing tables the one shown is among the most popular. Authorities tell me that for comfortable working its height should be just sufficient to allow the laundry maid to rest her palms flat upon the top.

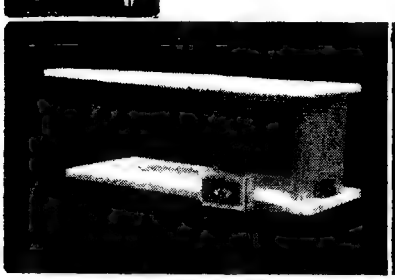
In my family there are two laundry maids with about six inches difference in their heights, so we had to compromise a little after a test on an ordinary table. At the foot of **fig. 8** it will be seen that even after working to these measurements an adjustment of an inch or two can be made when fitting the feet to the floor. One end which was slightly low has been packed up until the top stands level, then a block of the required size is laid against each foot in turn and pencil marks scribed around so that when

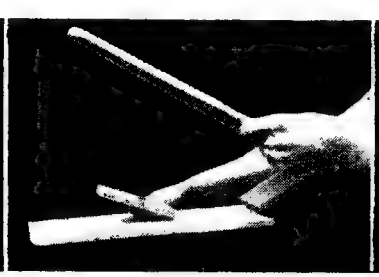


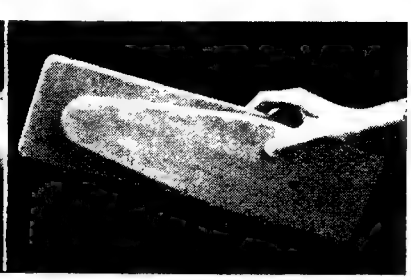


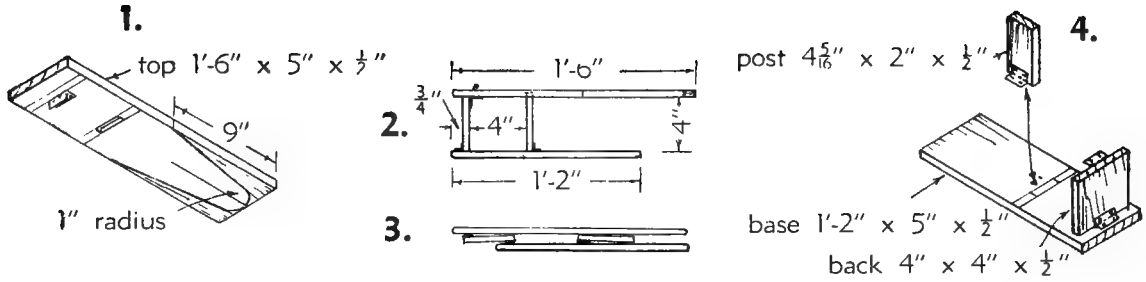
Photos showing ironing table folded and being unfolded for use.

Details of sleeve board and method of assembling.

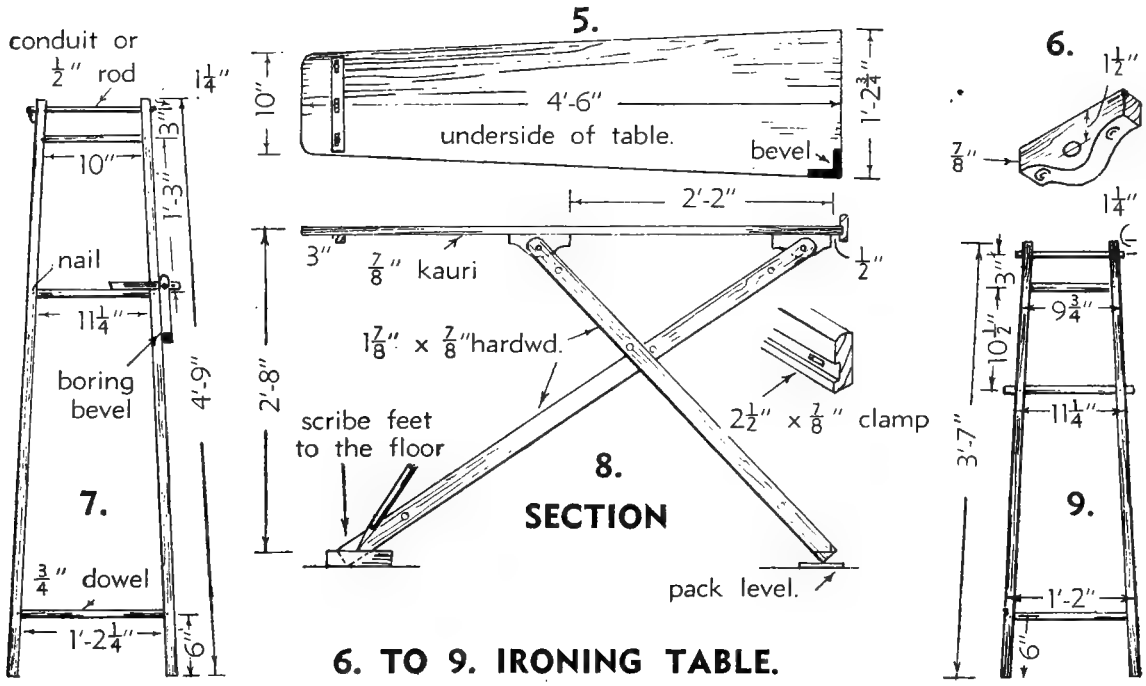




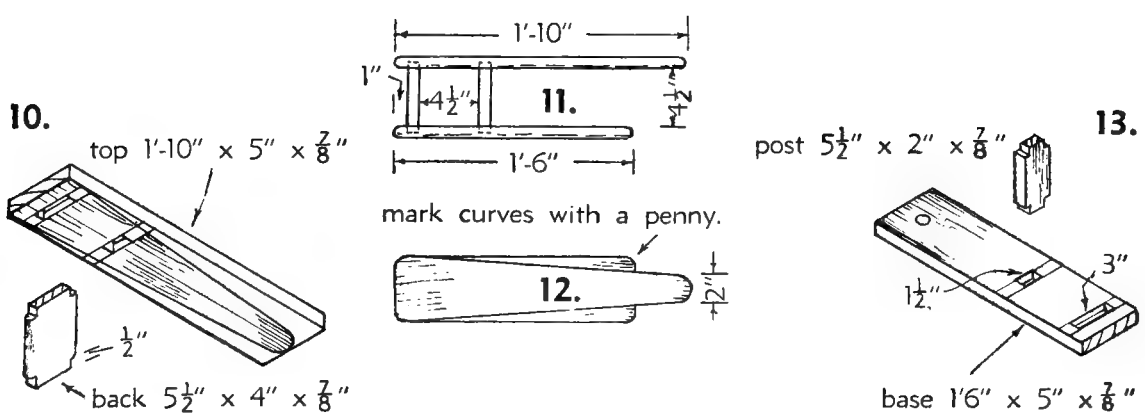




1. TO 4. PORTABLE IRONING BOARD.



6. TO 9. IRONING TABLE.



10. TO 13. DETAILS OF A SLEEVE BOARD

the waste is cut off the table comes down parallel to the floor.

That, of course, is the last job, and assuming we are satisfied with the height shown, the materials that are set out in the table on page 65. will need to be provided.

Sizes quoted there are after dressing and should not be reduced or the legs are likely to bend under working pressure. In fact, if a fairly thick board is in the 1in. stack it may be possible to dress it to finish 15/16in. with advantage.

Considering **fig 7**, it can be seen that holes for lengths of ¾in. dowel which form the rails must be bored on an angle and that it is most important to set out the legs in pairs. If a leg is held in the vice and bored with the bit held horizontally a good guide for direction is to cut a piece of ply to the angle taken from **fig. 7** and tack it to the bench top behind the work. In this way the bit may be "sighted" in the right direction as boring proceeds.

A wooden sleeve on the bit will gauge the depth of ⅝in. which has been allowed on rail lengths, but a trial hole will need to be first bored to see if the bit will bore to that depth before its point shows through.

When leg frames 7 and 9 are ready assemble them dry and measure their diagonals for adjustment until equal. Waste from the top will be sufficient for brackets providing it is all sawn off one side instead of being set out from a centre line as appears in **fig. 5.** What can be got from **fig. 5** is the angle to which the ends must be sawn when marking from a "square edge."

The brackets.—**Fig. 6** are bored to an easy fit for the pivots and ½in. deep; also, when boring for screws, the holes should be slack in the bracket and tight in the table top so that the latter can be pulled hard up against the surface.

Use 11 or 12 gauge 1½in. screws and with the table upside down on the bench screw the brackets on with their leg frames in the "closed position," noting that they show equal margin on each side and lie snugly against the top, after which the table may be stood upright for inspection and if correct dismantled for final cleaning up and assembly.

Rail ends and inside holes must be well glued before nailing from underside of legs. All sharp corners should be chamfered or rounded.

The clamp on the wide end of the top is grooved on to keep the top straight and slot screwed to allow it to shrink or swell without splitting. It also serves to keep the iron from falling off when momentarily laid aside. The clamp at the front end is slot screwed and if cut to fit between the legs will not hinder their closing.

Workshop Wisdom

Don't use a hardwood block under sandpaper; it will scratch instead of smoothing the job. Use something soft such as cork or Caneite, or rubber glued to a softwood block.

When cleaning up a board for polishing never work across the grain or the scratches will show through the polish.

A saw should slide through wood fibres, not be jabbed through them. When cutting seems hard, lift the saw, don't force it.

WORKSHOP WISDOM

It Pays to be Methodical

An article elsewhere is devoted to the importance of methodically setting out any job that is to be undertaken. The handyman is strongly advised to be methodical also in the examination of the pieces of timber he has selected for a job. Take, for example, a framing job of some kind. The first step is to examine each piece and find the side and edge which are most free from knots, defects, etc., and fairly straight. In nearly every case the most suitable way for the grain to run will be from right to left as indicated, because in doors, windows, picture frames and the like it will then be possible to work with the grain when grooving, moulding or rebating. The various pieces should, after examination, be face-marked and placed with their fellows of equal length in groups that can quickly be reached when planing begins. There should also be a clear space for them when that operation is finished.

It may, of course, be asked why the pieces were not planed immediately after examination, a course that is sometimes convenient—but the advantage of the first method is the opportunity it gives of re-arranging the pieces. It may also be taken for granted that any time lost in the double handling will be more than regained in the extra speed with which a pile of well-arranged stuff can be planed.

THE COOLGARDIE SAFE

THE COOLGARDIE SAFE is, of course, well known among country people, its working principle being to siphon water by means of flannel strips from an upper tank on to hesian or towelling which takes the place that panelling would occupy in the frame of an ordinary cupboard.

By this means the covering is kept damp so that the air impinging on it causes evaporation and the lowering of temperature in somewhat the same way as a water bag is kept cool on the fender of a car.

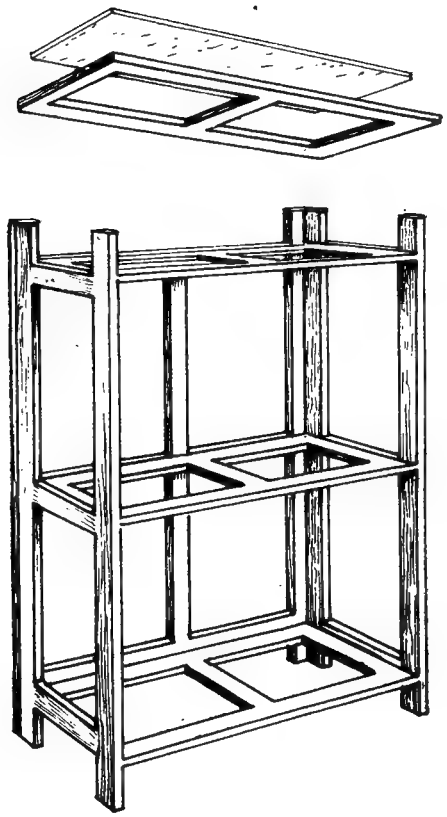
Much of the water evaporates from the covering but a proportion will drain into a catchment tray which must either be emptied by hand or provided with a spigot at one end through which the overflow may escape.

Many of these safes stand in ferneries or similar cool spots where the drainage is acceptable to plants, but for inside use it seems necessary to provide such an outlet as is shown in fig. 5, where the spigot empties into a funnel and then through a length of half-inch water pipe clipped to joists beneath the floor and leading to an outside drain or garden bed.

Such a device has been in use with our own ice chest for many years with entire satisfaction. The funnel allows for slight movement of the tray, and when it is removed only a very small hole shows in the floor.

With the spigot near the top the tray is kept nearly full of water and provides an ant trap, but unless by some good chance one is able to build his safe of kauri, the feet will need to be kept well painted to resist rot, or each may stand in a glass jar which is slightly higher than the water in the tray.

Many of these safes have no cover for the top tray, but for outside situations it seems better to keep out leaves and dirt, whilst for



Frames nailed together ready for the doors.

inside use the appearance is certainly improved by building as illustrated here, and using a watering can for refilling, instead of handling the tray itself.

Construction can be very much simplified with corrugated fasteners or wiggle nails instead of dowels or mortises and tenons. These handy little gadgets are now being used in many kinds of jobs and here have the advantage that they are unlikely to be loosened by the action of damp.

If mortised joints are preferred use waterproof glue or paint on the tenons and secure each with a ⅜in. dowel through the face instead of relying on wedges which will eventually drop out.

Prevent the corrugated fasteners from rusting by dipping each in paint beforehand or drive them beneath the surface with a fine punch and putty the holes.

Surprising as it may seem it takes nearly 120 ft. of 2 in. x 1 in. batten and 100 ft of half round fly door bead to build the job, the most economical way to order the batten being ten 9 ft. lengths for the general framing and three 8 fts. for the door stiles, the back muntin and the tray guides. This quantity allows for mortised joints but if the joints are square cut and wiggle nailed each cross rail will be about four inches shorter and probably one of the 9 ft. lengths will be saved. A sawing block like the one shown in fig. 11 will serve for cutting square ends for the framing or halving joints for the doors. As the two doors, the ends and the shelves are all 18 in. wide, and the material when dressed will probably be 1⅞ in. wide, the neat length of all cross rails in these units should be 18 in.—3¾ in., viz., 14¼ in. for butt joints.

By tacking the sawing block, without its wooden stop, to the bench and driving a nail 14¼in. from the saw cut it becomes possible to cut a rail to that length by first sawing off one end square and then sliding it along until it is stopped by the nail, repeating the operation until sufficient are cut exactly alike and square.

Halved joints such as will be required for the doors should be gauged and ripped down the grain first and then shouldered with the aid of the stop as shown which results in a big saving of time and gain in accuracy.

The back frame is 4ft. 6in. x 3ft. 0in. and when all frames are ready they can be connected with 2in. wire nails and the top and shelves can be covered with cement sheeting, which is better than wide timber shelves which would probably warp. The shelving should be fixed with galvanised clout nails.

The plan shows doors that are hung on the face of the job and have ⅜in. of central clearance to allow for expansion, the gap being covered by a 1½in. x ½in. strip.

It is very difficult to buy brass hinges at present but it will pay to take some from an old fitment and replace them with steel if that is convenient rather than have quickly rusting hinges on the safe. The alternative is to paint the hinges and apply a touch of vaseline once a week.

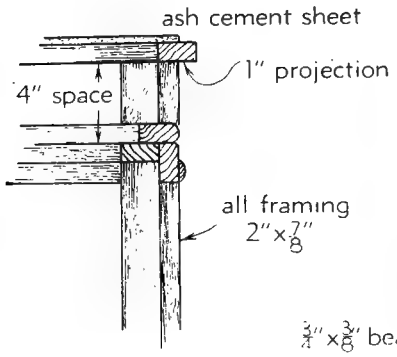
Three coats of paint all over will be needed to make a first class job, and the first two should be applied before fixing the towelling with tacks along the edges in the manner of fly wire and nailing half-round bead along all the margins Then a coat of enamel to give an easily washed surface and a snap catch will complete the woodwork.

Unless one is an experienced sheetmetal worker a good plan before tackling tray construction will be to examine a good quality meat dish. Note the wiring around its top edges and how the corners are lapped for soldering, at the same time comparing the dish with the tray set-out shown in **fig. 10.** Wiring laps should be turned whilst the sheet is still flat by cramping a clean edged piece of timber along the lines one by one and dressing the laps over with a wooden dresser or a block and the hammer—not the hammer alone or they will be kinked. Similar procedure is correct for the sides. Cramp them tightly to the bench by means of clean-edged timber and cramps or nails outside the metal sheet, then turn the sides up sharply before finally dressing them into place, and turning the soldering laps over their respective corners to be plain soldered, or riveted first and soldered afterward. Now lay the tray bottom upward on the bench, cut the wire, bend it to shape, and pressing firmly down on it dress the laps over with a wooden block until the four edges are in place.

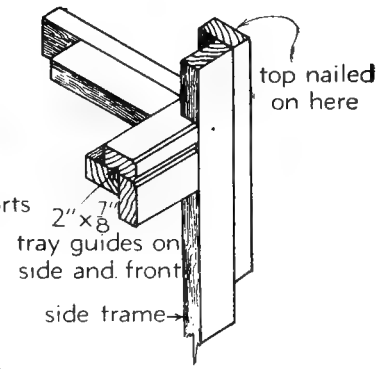
Such a safe as this, whilst still being suitable for outdor situations, is neat enough for a country kitchen and should tide even those of us who used to be pampered town dwellers over the present times of stress.

Details of the Coolgardie Safe

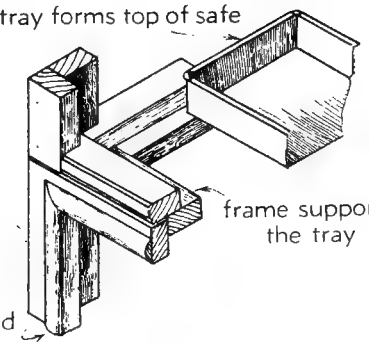
1. DETAIL OF TOP

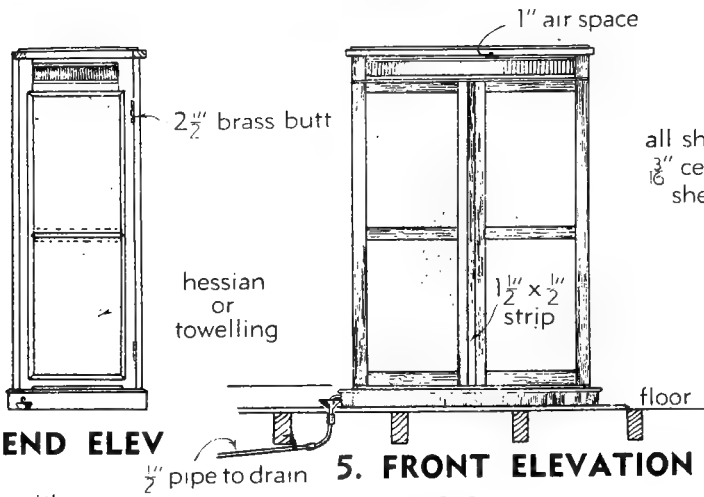


3. BACK CORNER



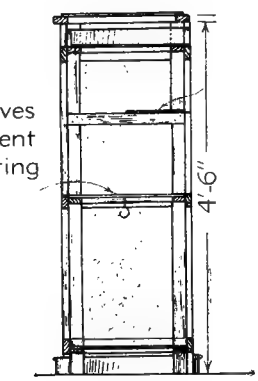
2. FRONT CORNER



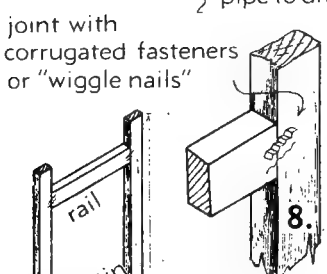


4. END ELEV

5. FRONT ELEVATION



6. SECTION



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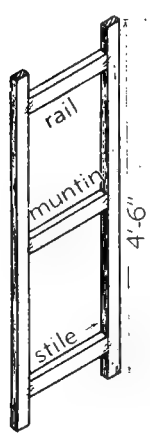
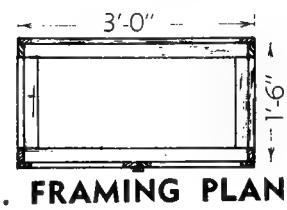
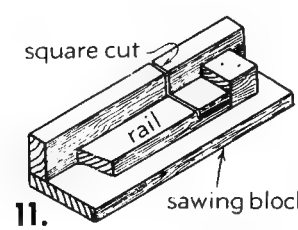


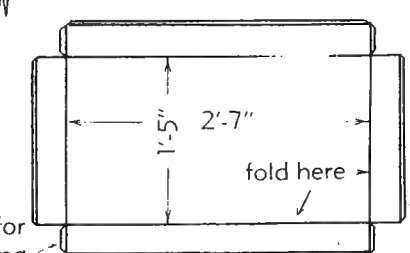
8 & 9. SIDE FRAME



7. FRAMING PLAN

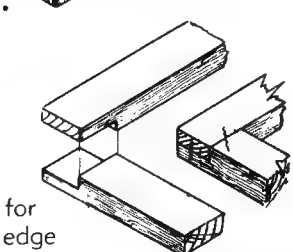


11.



bottom tray to be 3'-4" x 1'-9" inside

10. TRAY SET OUT



11 & 12. DOOR JOINTS

FITMENTS FOR THE HOME LAUNDRY

AS BUILDING COSTS INCREASE, floor space must be used to more and more advantage and furniture which will disappear into walls is likely to become more popular. This is especially true of the home laundry where the space ordinarily taken up by a table and a clothes horse would often permit of freer movement if either could be quickly moved away.

Fig. 2 shows a line sketch of a ceiling clothes rail which was stock equipment of houses in England years ago probably because of limited drying areas outdoor and maybe a lack of fine weather.

But even in Australia there are days when indoor drying is called for, and, apart from that, there seems sound common sense in the idea of a rail which can be lowered behind the worker at the ironing table, filled as she goes along, and then hoisted out of everyone's way.

Fig. 3 shows how such a rail is attached to the ceiling by means of single and double pulleys and first quality cotton sash cord threaded through them to be brought down to a cleat hook on the wall. Common hard sash cord is useless here because it tends to break where it rests on the pulleys and may easily cause an accident, but the softer material will last for years

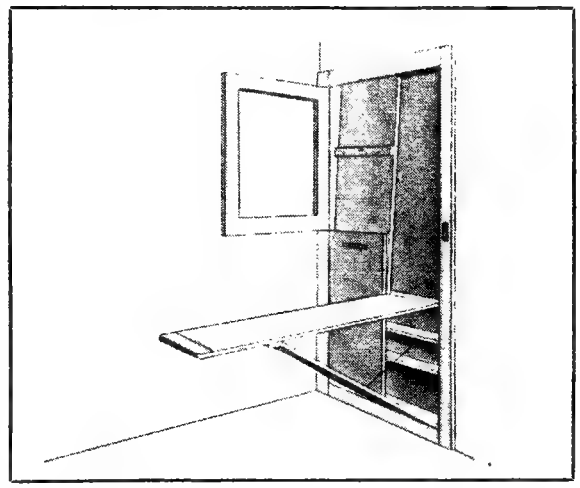
The cord is usually all in one length threaded through the side rails as in **fig. 2**, then over the pulleys and back again to the other end. Height of hoist is regulated by knots in the cord and what is most important in fixing is to find dead centre of the ceiling joist or rafter and bore carefully with a bit about the size of the solid core of the screws before fixing the pulleys. If this is done the rails will bear a surprising weight, but careless fixing, which results in a split joist, will let the whole thing down when least expected.

Actual construction of the rail is simple, material required being one 11 ft. for centre rail and ends and two 9 fts. for side rails all out of 3 in. x 1 in. straight hoop or white pine without knots.

Note in **fig. 1** that instead of the usual side wedges these short tenons will be wedged in the centre and the direction of the spread will be along the length of the side rail not across it because the latter might start a fracture.

In a word, the whole job, simple as it is, must be carefully fitted, cramped up and glued if it is to have its maximum strength when finished. Perhaps the chief space stealer in any small room is a table, and there should be advantage now in studying details of one which will fold into the common four-inch stud wall. For any other room it could be in one piece, and the door which encloses it could be in two sections instead of three, but there seems advantage here in dividing the table top as shown so that it can be used as a skirt board. A 9 ft. length of 12 in. x ⅞ in. white pine cut in two forms the table top which, if it is to keep straight, must certainly be clamped across the ends as in **fig. 9.** Tenons will be 1¾ in. x ⅜ in. with ⅜ in. haunches between them, all thoroughly glued and wedged for subsequent cleaning off.

The plan, **fig. 10,** gives a general idea of stud layout and shows that clearance must be allowed



on the left of the opening or the table will not clear the open door. If the room is indoors and plaster sheeted, as it may be, lift a sheet right off, cut out a stud and re-arrange the opening as shown in elevation, **fig. 8**; or, if a wider table is desired the righthand short stud can be left out.

Note that a trimmer must be fixed 2 ft. 5 in. from the floor to take the 6 in. tee hinges with which the table sections are attached and, whilst this work on the wall is going on, the lower portion may be fitted up with a couple of shelves, one of which can be covered with asbestos or cement sheeting to take the electric iron.

All three doors are of 2in. x ⅞in. framing with plywood panels glued and tacked on to present a flush surface when all are fixed. The frames can have plain butt joints glued and fastened with a couple of wiggle nails in each.

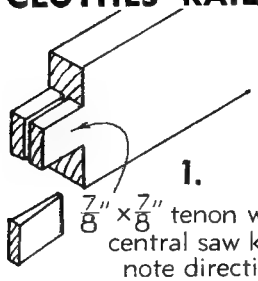
Doors will be hung with 2½ in. steel butt hinges to a frame made from 3 in. x ⅞ in. pine and nailed to the studs. The lefthand bottom door should have a hook and eye fastening so that it can be securely fastened up when only the righthand section of the table is in use, and the other two doors can have ball catches or "Egret" handles with press knobs.

Before fixing the cleats on the underside of the table, open the lower doors right to the floor and prop the table level by means of a stick tacked to the outer end of each section. Then raise a section of the door, mark where it strikes the table and square a line across to locate position of cleat.

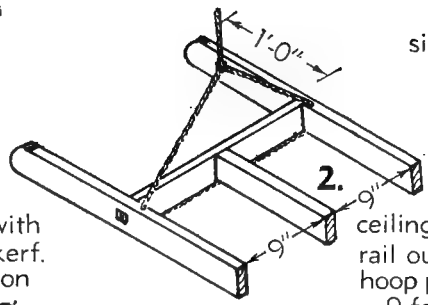
When satisfied that all sections engage each other correctly screw a piece of chain to each door in such a position as to clear the shelves when closing.

If it is desired to cover the ironing table permanently as is sometimes done the necessary clearance will need to be arranged between the table sections, but in conference with the head of our own home laundry it was suggested that a cover like a bolster case could easily be slipped over the section to be used as a skirt board and removed for storage in the cupboard or to be washed when necessary.

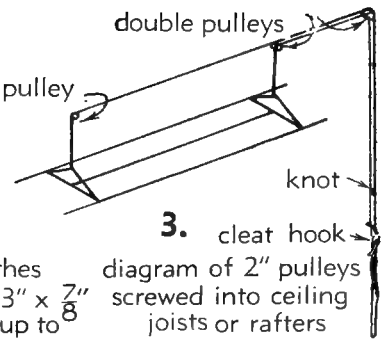
1. 2. 3. CLOTHES RAIL



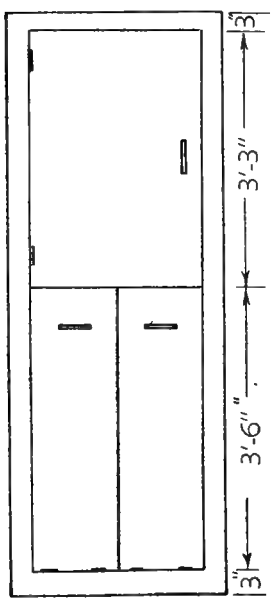
1. $\frac{7}{8}$" x $\frac{7}{8}$" tenon with central saw kerf. note direction of wedging



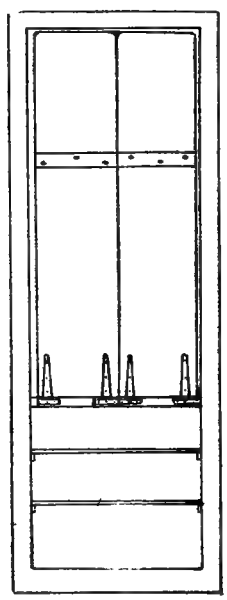
2. ceiling clothes rail out of 3" x $\frac{7}{8}$" hoop pine up to 9 feet long



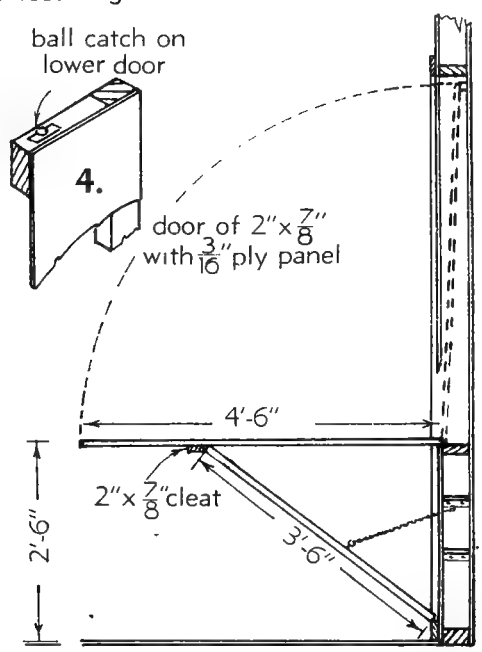
3. diagram of 2" pulleys screwed into ceiling joists or rafters



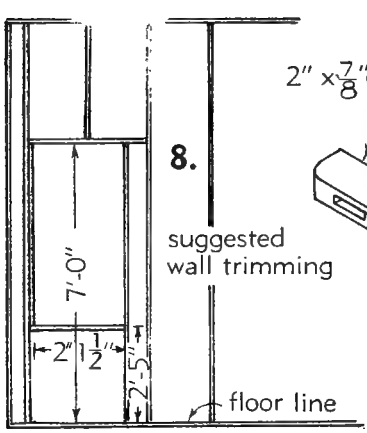
5. CLOSED



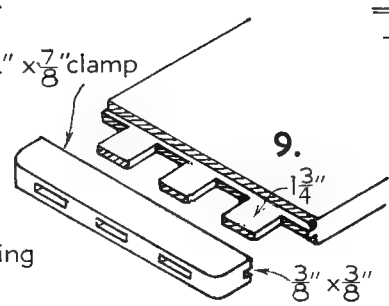
6. WITHOUT DOORS



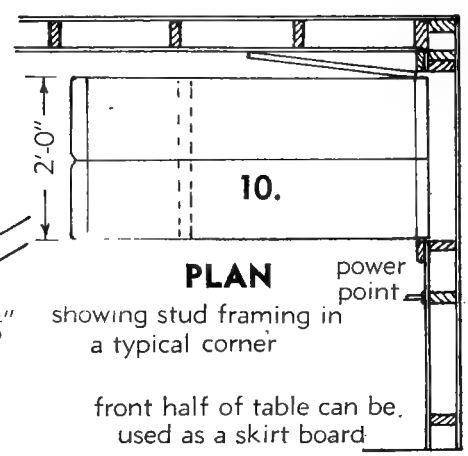
7. WORKING POSITION



8. suggested wall trimming



9. clamped ends on ironing boards help to prevent warping



10. PLAN showing stud framing in a typical corner

front half of table can be used as a skirt board

FIG. 4 TO 10 DETAILS OF IRONING CUPBOARD

THE POPULAR TALLBOY SAFE

THE VALUE OF A TALLBOY SAFE for the kitchen is only equalled by the simplicity of its construction. Ideal for the housewife it is ideal for the handyman. Its size and shape can be adapted to suit conditions. The main principle of construction for this type of safe is to make two side frames and connect them with rails and shelves and a plywood back. With flywire covering frames and doors they are light and secure. Sometimes the flywire is tacked inside the frames but this makes repairs and renewals difficult; fixed outside with half round beading is better.

For a quick, cheap job the frames can be made with square cut joints and corrugated fasteners (as done in factories for mass production) but a dowelled job is more workmanlike and not difficult if templates of card or zinc are cut to suit rail ends as shown in **A.B.C. fig. 1.**

Gauge a centre line down the template before pricking dowel centres through with a fine awl.

Cut a V at the top of each template to avoid error and, having sawn two pairs of stiles to exact length of 5ft. 5⅛in., set out the top-edge lines of the wide rails, apply the wide template to these and prick the dowel centres through.

Template A will be used for the top rails and applied right to the end of the stiles. B will be useful later when we tackle the doors.

If using a cardboard template, it pays to gauge a centre line on the timber to correct any sideways error in the marking and, unless a dowelling jig is available, use a guide stick cramped alongside the work to ensure straight boring of holes an inch deep into stiles and 1½ in. deep into rails. Countersink all dowel holes and point the dowels for easy entry. Then clean up inside edges of the members before gluing and driving dowels into stiles. Wipe off the surplus glue. The reason for driving dowels into stiles first is to take full advantage of the depth available; leaving ⅛ in. clearance in the rails where depth of boring is not so limited.

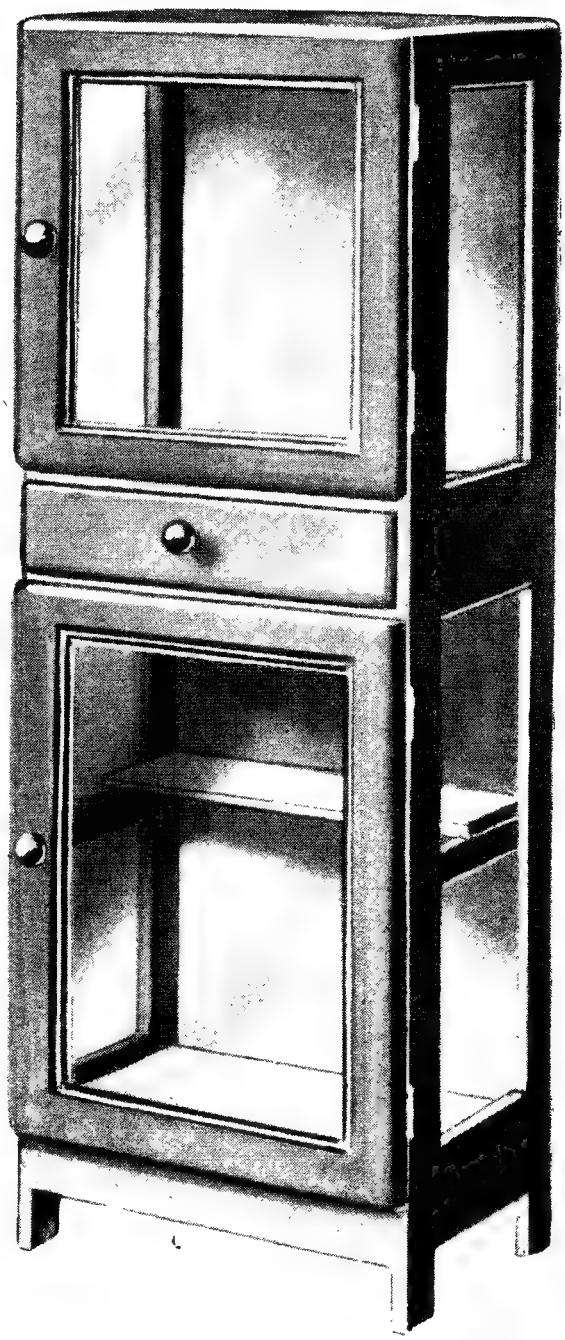
See that the frames are square and out of twist, then lay them aside to set and make the doors in exactly the same manner as described above after having checked the dimensions from your frame.

Shelves, also, should be set out together, marked to length with chisel lines and sawn exactly square, for on this will depend the smooth working of the drawer.

When the various frames are set they can be cleaned up and connected with glued and nailed joints. Fix the bottom rails level with the bottom edges of the wide rails in the frames, then fix the top back rail and the lower middle shelf before squaring up the carcase and tacking a brace on the back.

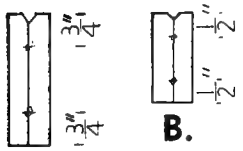
By resting the drawer sides on the shelf as shown—Fig. 13—a parallel opening will be assured. If extra shelves are needed, cleats can be screwed on before or after assembly.

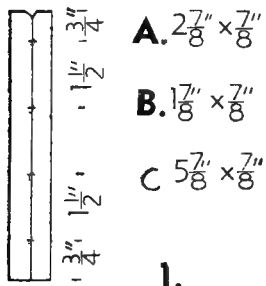
Handymen with plenty of experience will probably dovetail the drawer and rebate the front from a ⅞ in. piece, but an easy alternative is to make a plain glued and nailed box. Tack the plywood bottom on, and fix hardwood strips under the front and the two sides, but not across the back as this might catch any small obstruction on the shelf.



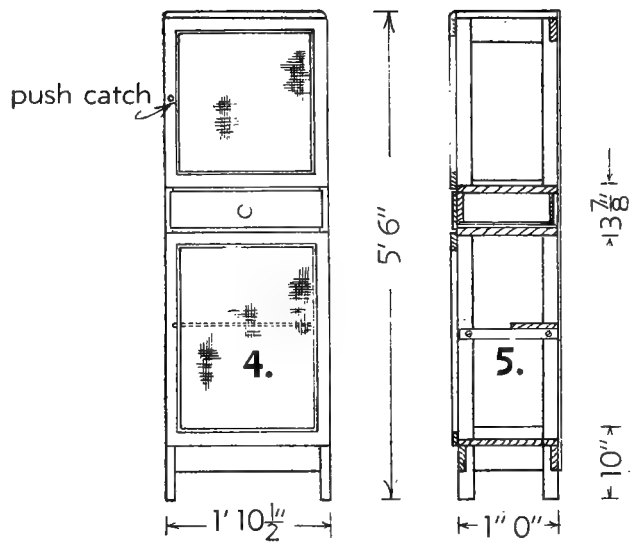
Take special care to ensure that the drawer is square and out of twist and allow about

Details of the Popular Tallboy Safe

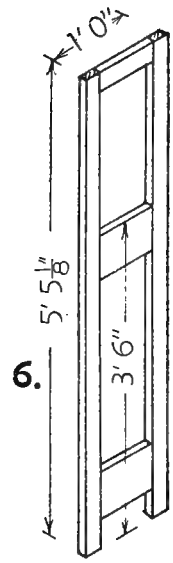




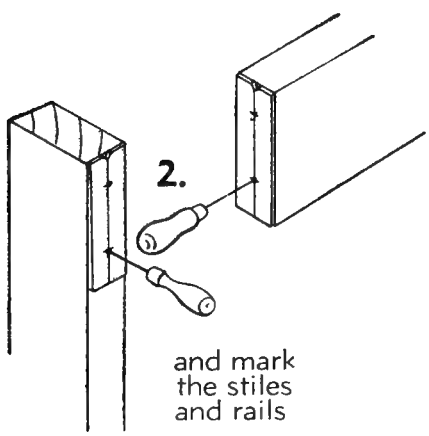
make templates like these



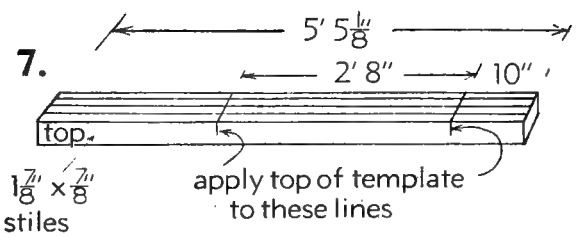
FRONT VIEW & SECTION



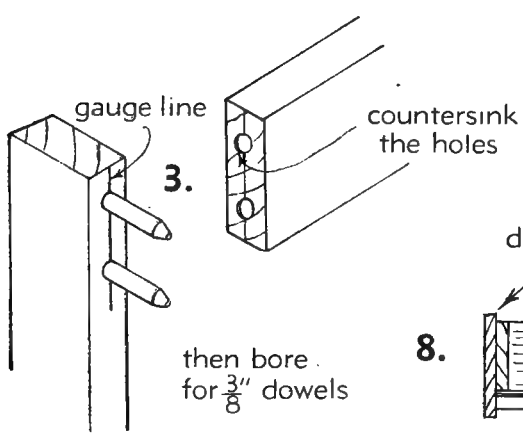
make two frames like this



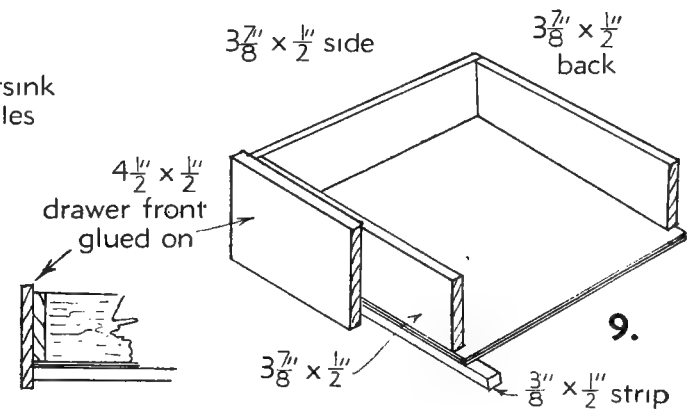
and mark the stiles and rails

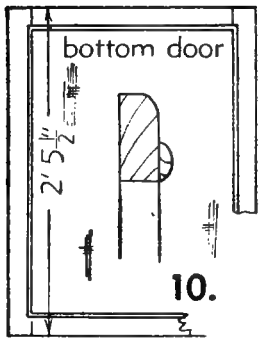


arrange pieces in pairs when setting out



then bore for 3/8" dowels





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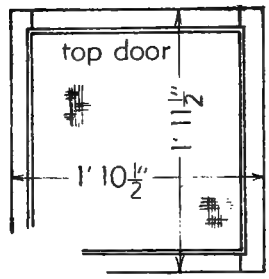

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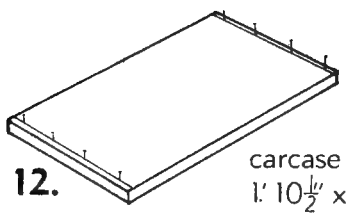

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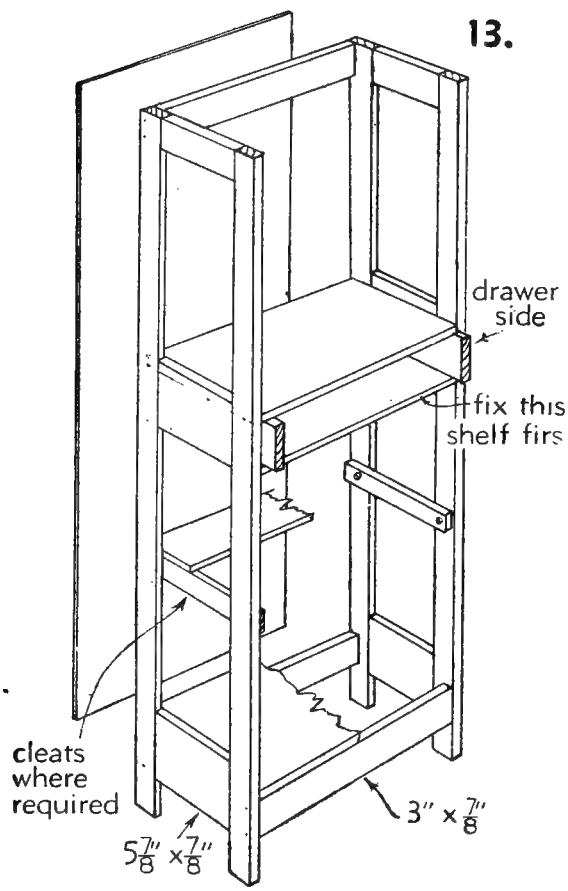


13.

1/16 in. clearance when tried in the opening. Then glue the wider front on to show a 5/16 in. projection all around. If properly cramped or weighted, the glue will hold the front quite firmly, or four screws can be driven from inside to make certain.

Flywire, which is now obtainable in reasonable quantities, can be bought in widths increasing by 2 in. stages from 2 ft. to 3 ft., probably the most economical purchase here being 3 yards of 24 in.

Flywire may be cut neatly to requirement by using a ¼ in. chisel and a straight edge. Tack the straight edge down over the line to be cut, turn the bevelled edge of the chisel toward it. Tip the handle forward and toward the right, bringing the outer point of the chisel on to the wire for making the cut, which is quicker and cleaner than the one made with scissors or snips.

Do no more cutting at this stage than is necessary. Leave all extra width on. Then tack one side and an edge to the frame at about 4 in. spacing with just enough strain to keep a good line. The opposite side can be gripped with the pliers—or by hand if there is enough waste—while tacks are driven in such a direction as will gradually tighten the strands. Keep a watchful eye on the lines of wire or they may be pulled crooked and spoil the appearance of the job.

After the wire is tacked on, there will be a side and an edge to trim off with chisel and straight edge as above and along lines that will be covered by the beads.

Before mitreing the latter, cut and group the various lengths, allowing ½ in. waste on each. Then mitre one end of every piece in a group before holding each right up to the edge of stile or rail and lightly tacking the mitre point for the opposite end.

Fixed as shown in Fig. 10, a frame can be easily painted up to its inner edges, whereas if the bead were kept back there would be a narrow margin of wire over the wood which could never be kept clean

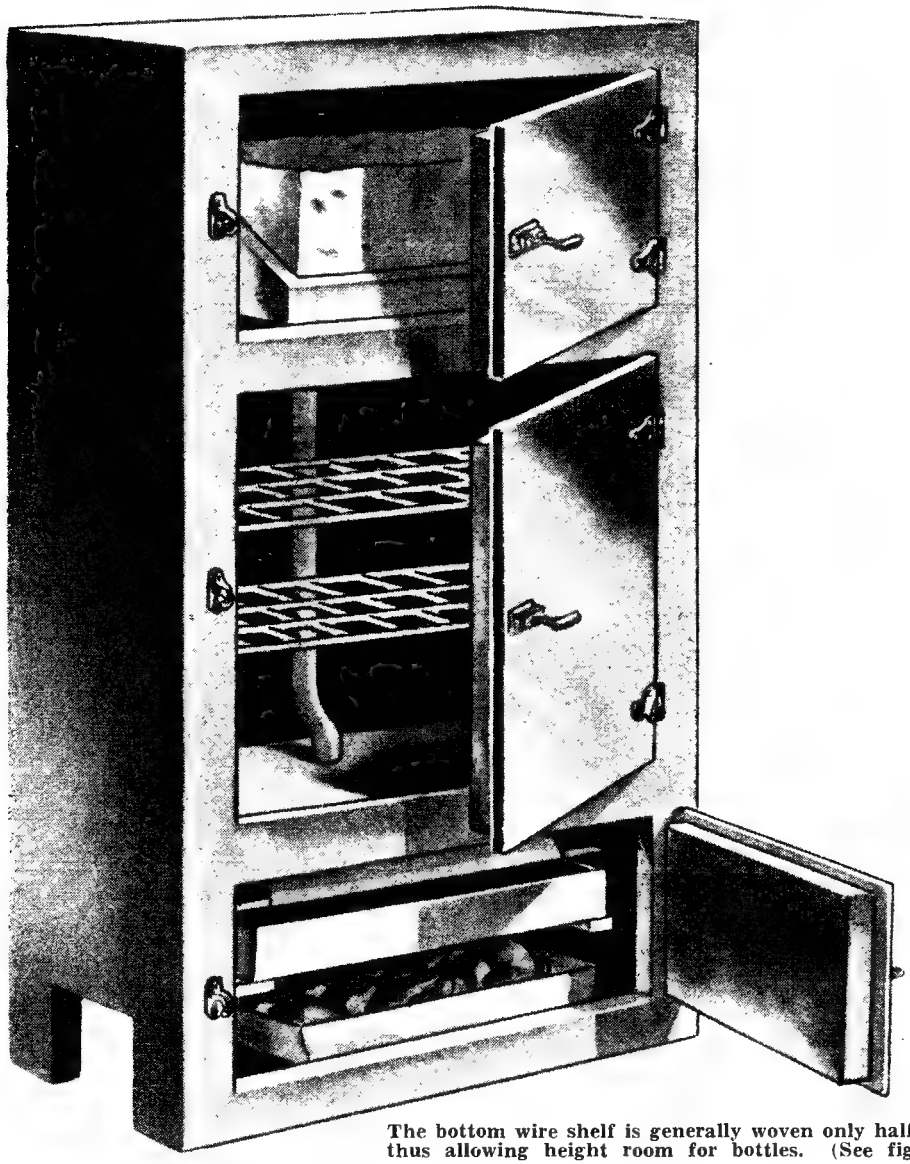
Lay the carcase on its back when fitting the doors, and finish by rounding outer edges of doors, drawer, and carcase top to the curve of a threepenny piece.

CUTTING LIST (Waste allowed)

Item	Size in.	in.	Material	No.	Lgth. ft.	in.	Details
Stiles	1⅞ x	⅞	Hoop Pine	4	5	6	Dressed 4 sides
Rails	5⅞ x	⅞	White Pine	1	3	0	Cut four
	2⅞ x	⅞	or	1	7	0	Cut five
Cleats	1⅜ x	⅞	K.D. Ash	2	1	0	
Shelves	12 x	⅞	" "	1	6	0	Cut three
	6 x	⅝	" "	1	2	0	Or as required
Top	13 x	⅞	" "	1	2	0	
Door stiles	1⅞ x	⅞	" "	1	9	0	Cut four
Rails	1⅞ x	⅞	" "	1	8	0	Cut four
Drawer	3⅞ x	½	" "	1	6	0	Cut four
	4½ x	½	" "	1	2	0	To glue on
Runners	⅜ x	½	" "	1	4	0	Sides and front
Plywood	36 x	3-16	" "	1	6	0	Cut as shown
Fly Bead		⅞	Half-round	-	50	0	
Fly Wire	24		Galv.	1	9	0	To cut

Two pairs of 2 in. steel butt hinges, two "push-pull" catches, and a drawer knob.

A REALLY EFFICIENT ICE CHEST



The bottom wire shelf is generally woven only half-way, thus allowing height room for bottles. (See fig. 10.)

TO MEET THE REQUIREMENTS of those whose circumstances debar them from installing a refrigerator, manufacturers of ice chests have steadily improved their product. Indeed, it would appear, from illustrations and advertisements, that the modern so-called "ice refrigerator" has achieved everything possible—except perhaps reduction in price.

I have not, however, noticed provision for drainage to outside nor any utilisation of the ice water for keeping salads fresh.

I learn from the household authorities that if lettuce and similar garden stuff is actually resting in water it will become sodden, but if ice cold water can be allowed to trickle through it and drain away, the crispness will be retained. Such a makeshift arrangement as standing a plate of lettuce on a brick in the ordinary drip tray may serve the purpose, but as an improvement on that, the tray shown in **fig. 14** was devised.

It consists of a perforated cover hooked over a piece of electrician's conduit. It rests on the tray by means of the wire around which its lower edge is rolled. This cover is 14in. x 12in., including the 2in. trough formed at the top by soldering semi-circular pieces into the ends.

Most of us have seen water actually rise above the rim of a glass before it spills. In similar manner, the trough will fill along its whole length

until surface tension is no longer strong enough to hold the water and it will flow down the slope and drip through the ¼in. holes.

The action depends on the tray being set level, but you can see from the water in the trough if there is any tilt caused by an uneven floor. This can be righted by packing or scribing the feet of the chest.

The outside drainage can be arranged by bringing half-inch water pipe under the floor to finish with a quarter-circle bend and two unions, or the pipe can be led above the floor and through an adjacent wall. I have tried both methods and found them satisfactory. The space usually occupied by the drip tray makes fine cool storage for fruit.

To allow for slight movement of the ice chest and easy removal of the salad tray, the waste is not led right into the pipe, but into a galvanised or enamelled funnel as in **fig. 7**, which also shows the sloping ledges on which the salad tray rests.

The upper works are detailed in **figs. 2, 4, 6, 9,** and **11** which show that an ice box with sloping sides made from 24-gauge galvanised iron rests on bearers of the same material, which fit easily into staples screwed to front and back of the chest.

An ice rack, also of galvanised iron with all edges turned ¼in. to gain additional strength, fits snugly across the width of the box, but is 1½in. short at each end to allow cold air to pass freely below it and through the 4in. hole into the chamber beneath.

If you look at a well-made roasting dish, you will see that such a box as this can be cut from a single sheet of iron. The best way for a novice to proceed will be to lay out a cardboard pattern, fold it into shape, noting if laps have been allowed for corners and wired edges.

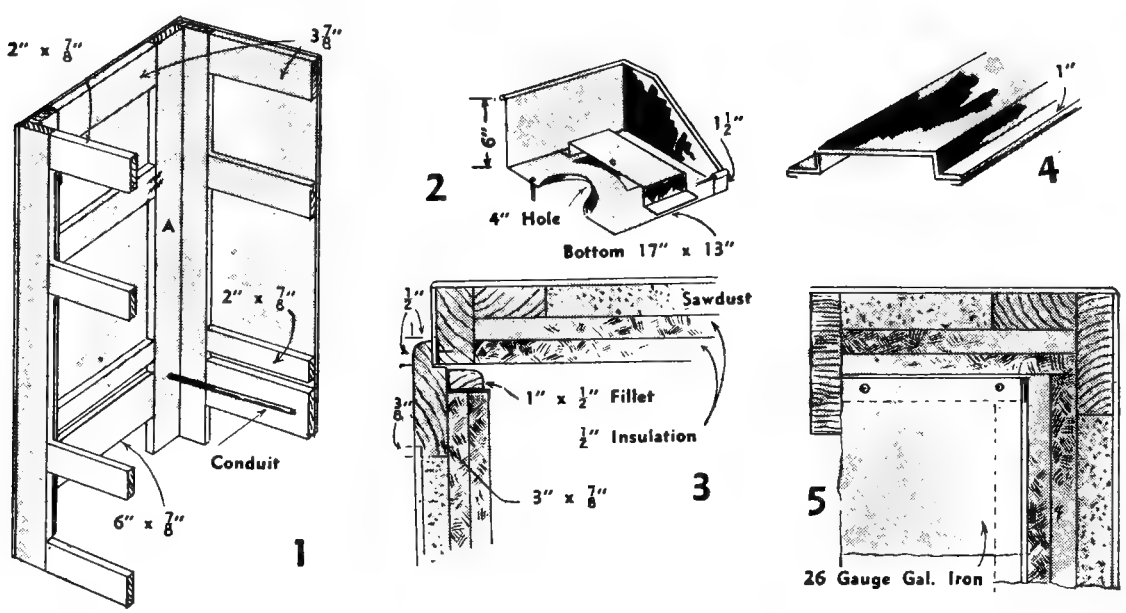
The air hole can be cut with a small chisel while the flat sheet rests on a solid block. It is then beaten lightly around the edge with a piece of round wood until a collar about ⅜in. high is formed so that water will be kept inside the ice box until it flows down the waste pipe.

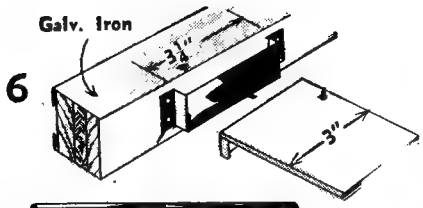
The curved piece of iron under the ice rack **(fig. 11)** forms a spring which helps to support the block. The ½in. outlet from the ice box must be entirely unobstructed.

Lead or copper pipe of ½in. bore, bent as shown, forms the waste and is supported by the bottom shelf and one of the nickelled clips used for bicycle pumps. Either kind of pipe can be bent if filled with sand and the ends tightly corked, for it then resembles a solid rod which is less likely to kink than a hollow tube.

When the ice box and the wire shelves are removed the pipe can be lifted right out for cleaning and, in fact, the whole inside surface

1. **Soft wood frames, assembled with cold glue and corrugated fasteners, are nailed together.**
2. **Part of the ice box. Note the turned-up collar and the ½in. outlet.**
3. **Front top corner, showing door construction.**
4. **Part of the ice rack. Note turned edges.**
5. **Inside back corner showing laps for insulation and galvanised iron lining.**
6. **Front rail and staple for ice box bearer.**
7. **Vertical section, showing drainage outlet.**
8. **Alternative door framing.**
9. **Back end of ice box bearer. Compare with fig. 6.**
10. **The lower wire shelf. Top one can have mesh all over.**
11. **Underside of the ice rack. Compare with fig. 4.**
12. **A shelf rest made from galvanised iron.**
13. **The front elevation. Buy the "offset" fittings early and make door rebates to suit.**
14. **The salad tray. Note its position in figs. 7 and 15.**
15. **Width section showing location of fittings.**
16. **Bottom corner. The 2in. side rail is skew-nailed in after floor boards are fixed.**





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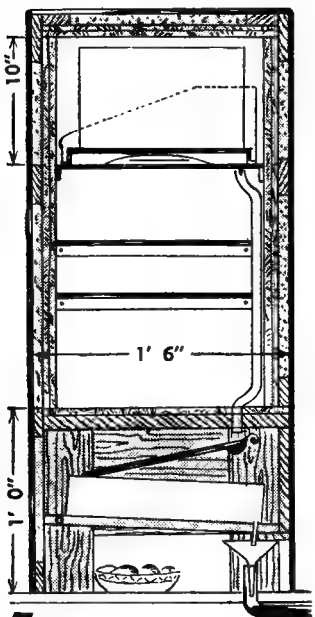

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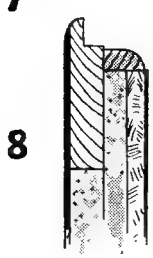

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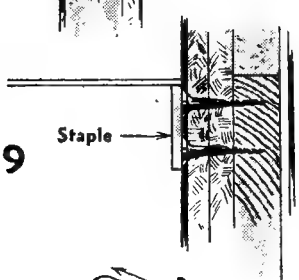

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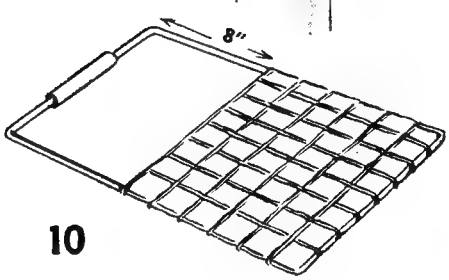

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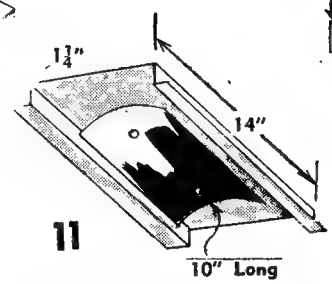

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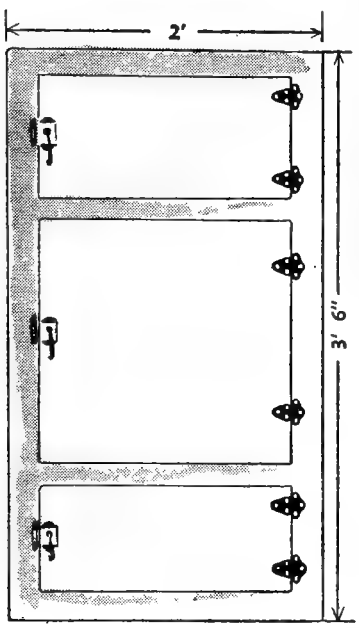

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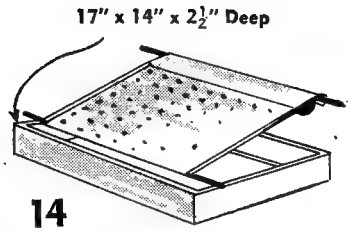

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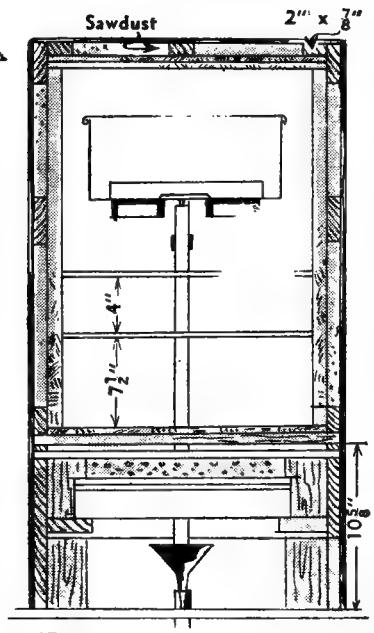

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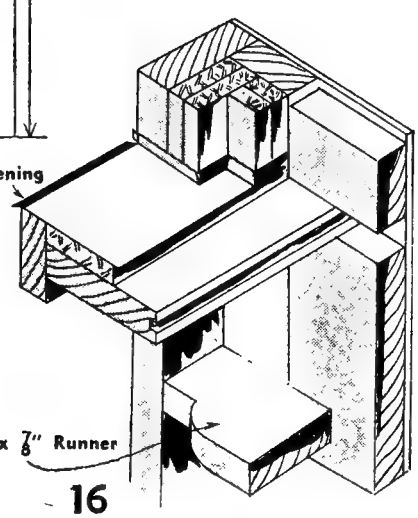


16

of the chest can be cleared in a couple of minutes leaving no obstruction except the ¼-in. ledges **(fig. 12)** on which wire shelves will rest.

The wire shelves can be home-made. Bend 8-gauge galvanised wire to form a rim, connecting the ends by a metal sleeve. A mesh of 16-gauge wire is then woven as in **fig. 10,** which shows that one shelf will be less than full width of the chest so that tall articles can project through it.

Actual framing of the chest has been designed so that only plain materials and moderate skill will be required. In **fig. 1** a complete side frame is shown nailed between portions of back and front. Considering the side frame only a moment, it is indicated at **A** that joints can be simple square cuts connected by corrugated fasteners or "wiggle nails." Cut the pieces to length in a sawing box with a square cut across it and a nail the right distance away to act as a stop.

Poor-grade plywood is no use because its edges cannot be satisfactorily cleaned up and every bulge in the sheet will show. The order should include two sheets of good ply, 6 ft. by 3 ft. x 3/16 in. sanded one side; two 6 ft. x 3 ft. sheets of 26 gauge and 1 sheet of 5 ft. x 2 ft. 6 in. x 24 gauge plain galvanised iron for the inside lining and the ice box. Masonite is an excellent alternative for covering and lining.

Insulating board is sold under various brands. The makers claim that half an inch of this is equal to about 3 in. of wood for our present purpose, but as the smallest sheet one can buy is 8 ft. x 4 ft., and insulation is the essence of our job, I have specified two half-inch thicknesses over walls and doors which, together with sawdust packed tightly between this and the outer covering, should mean a conservation of ice sufficient to quickly pay for the whole outlay on the chest.

Only half an inch of insulation is shown for the floor **(fig. 16)** because that is naturally the coolest place and greater thickness would present a soft surface likely to be dented in use.

When tackling the side frames, drive the nail 10 in. from the cut in the box, saw off the number of rails required, then mark 10⅝ in. from bottom of stiles to locate top edge of wide rail and 14 in. from the top for top edge of rail marked **A.**

The 2in. rail near the bottom is not nailed in until after the floor is fixed so at this stage the side frames can be glued and assembled on a flat surface and the back frame marked and nailed in similar fashion.

Rail positions for the front frame are shown in **fig 7,** and this can now be assembled and nailed to the others. With the four frames in place and tested for square, it is now possible to fix the floor as in detail 16 and nail in the 2 in. rails above it to form backing for insulation. Follow this by fixing the tray runners below the floor. These slope 1 in. from front to back **—figs. 7 and 16.** The top frame is neatly fitted and nailed inside the others—**figs. 3 and 5.**

Exact requirements for insulating board and inside lining can now be measured from the job, and **fig. 16** illustrates how iron is turned up along inside angles and beaten flat on to outside edge of doorway where it can be tacked neatly to the frame and afterwards covered.

The chest can be turned over whilst the top is lined. Then the back lining is fixed and the two sides treated as separate units. This is easier for most workers than trying to fit back and sides in one sheet. All inside angles are lapped half an inch.

Before fixing the outside sheets (which should be lapped as in **fig. 1**) a piece of conduit can be run right through the frame stiles to carry the top of the salad tray. This should be 1¼ in. below the floor so that the tray can be lifted off.

Fix covering along members of the front frame before measuring up for the doors which will lap ½ in. over edges of the openings.

CUTTING LIST FOR ICE CHEST FRAMES

Item	Size In.	Material	No.	Length Ft. In.	Details
SIDE		Oregon	No.	Ft. In.	Dressed four
Stiles	3 x ⅞	„	4	3 6	sides
Rails	3 x ⅞	„	4	0 10	
Rails	2 x ⅞	„	2	0 10	Two frames
Rails	6 x ⅞	„	2	0 10	alike
Runners	3 x ⅞		2	1 5⅝	
BACK		Oregon			One frame
Stiles	3 x ⅞	„	2	3 6	One frame
Rails	3 x ⅞	„	2	1 5	One frame
Rail	2 x ⅞	„	1	1 5⅝	
Rail	6 x ⅞		1	1 5⅝	
FRONT		Oregon			
Stiles	3 x ⅞	„	2	3 6	
Rails	2 x ⅞		4	1 5⅝	
TOP		Oregon			
Stiles	2 x ⅞	„	2	1 10	
Rails	2 x ⅞		3	1 0	

Cut and fit top frame after others are assembled.

Alternative door construction is shown in figs. 3 and 8. In the former, the panel is rebated into the framing. The latter has the panel glued right over to the edges, as is often done, with kitchen cabinet doors.

Angle joints for **fig. 3** will be mitres sawn after the rebating is finished. The door frames can be assembled like picture frames and strengthened by wiggle nails on the inside surface.

The frame for **fig. 8** can be mitred or square cut and the panel glued and nailed over before edge rebating is attempted. Then come the sawdust packing, the insulation boards, and the inside lining of iron carried over the edges and finished with angle fillet as shown.

A paring chisel should be used as a slicer, not as a chopper.

Don't swear at your screwdriver; grind it to fit the screw.

The spur of a gauge should be trailed along the surface, not sunk into the stuff.

The set of a saw depends on the job. Soft, wet timber calls for more set than is needed for hardwood.

When saw teeth are of uneven length, the cut will run towards the "long" side.

TWO BUILT-IN WALL CABINETS

Fig. 1 is a bathroom cupboard with bevelled mirror and narrow shelves built into the thickness of a fibrous plaster wall. Find the studs by light tapping with a hammer, and draw pencil lines of the opening to be cut. Remove the plaster with a fine saw. A nailed frame of 7/8in. stuff will serve for sides and top of the cabinet, which should project 3/4in. past the wall face when fixed complete with plywood back.

Studs will support the plaster on either side. But top and bottom will need supporting by cleats nailed to the frame.

To get the frame in the wall with the cleats on, the plaster sheet must be gently eased away from the studs; then the frame can be slid upward a little and dropped back into place ready for the plaster to be renailed all round and the holes stopped up.

A frame of 2in. x 3/4in. stuff or a piece of 5/8in. plywood will serve for the door to which a mirror can be fixed with nickelled clips. If a frame is used a thin plywood backing will protect the mirror. All fixing and hinging must be done before the mirror is finally attached. Use thin strips of rubber between the mirror clips and glass. Get the latter drilled at the shop for a glass knob.

Fig. 2 is a boot cleaning cupboard in the wall.

Location of studs here will be indicated by an occasional nail-head and if quite a small hole is bored through the tongue of a lining board the point of a key-hole saw can be started to cut the opening.

Thin cleats will support 7/8in. boards at top and bottom whilst they are being skew nailed to studs, and 1 3/4in. x 5/8in. battens nailed to the boards already cut out will form the door.

Note the hinges. It is possible to buy cranked hinges, but a pair of common strap hinges may be heated and bent in the vice, or the hinges may be screwed on flat outside.

The boot block is made from two 7in. x 2 1/4in. x 7/8in. blocks sawn to shape and glued together before being screwed inside the door a little away from the centre so that a brush or pad can be laid down whilst waiting for a turn at the next shoe. Support is by chain fixed so as to clear easily when the door shuts.

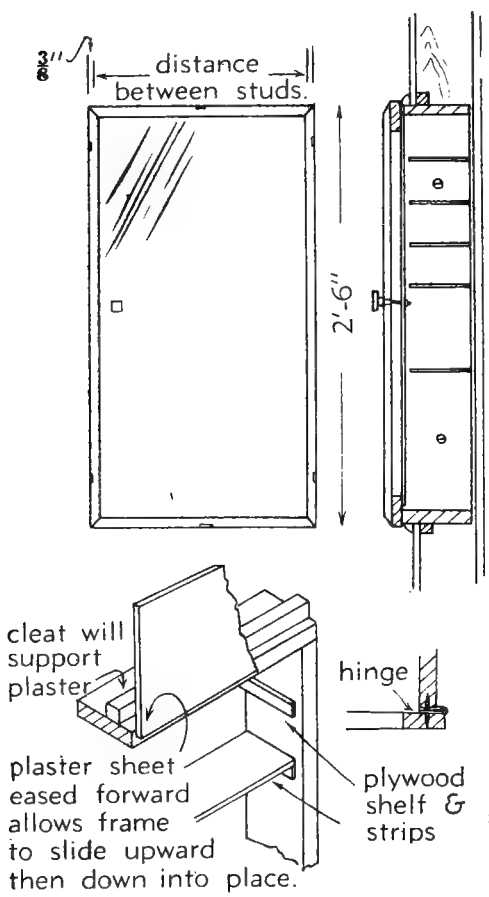


Fig. 1

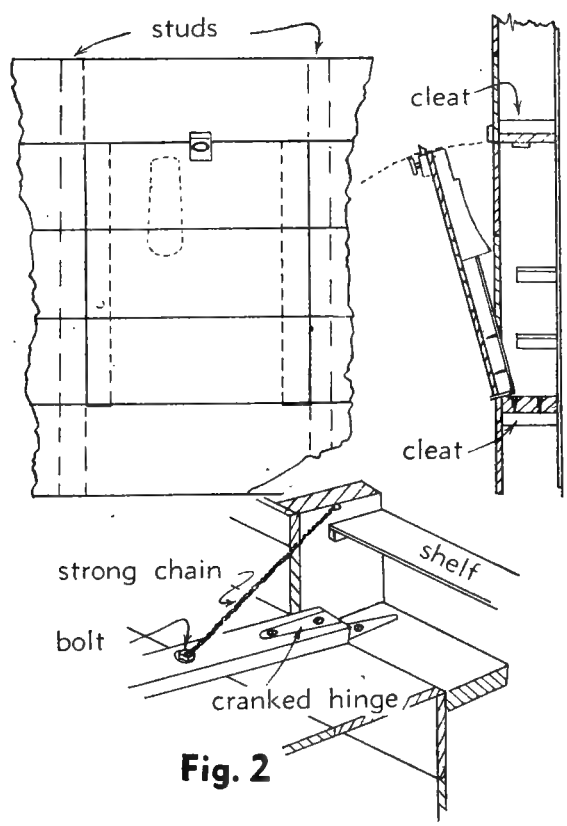
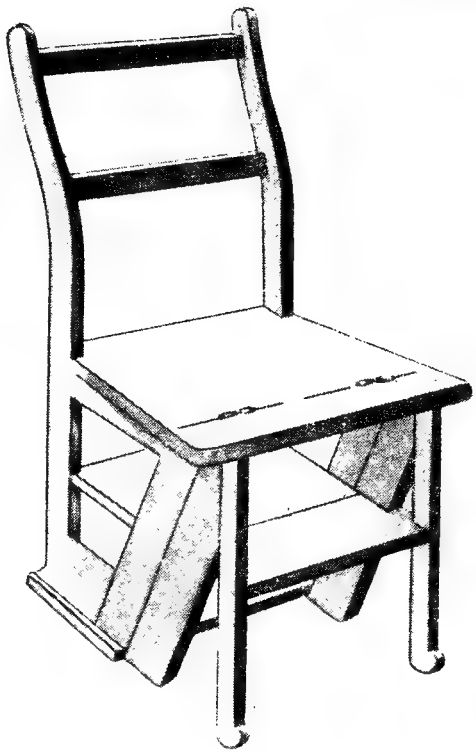
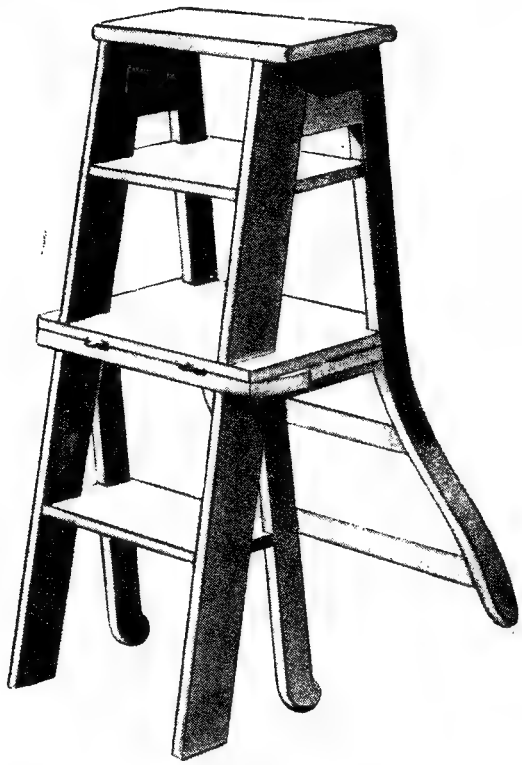


Fig. 2

KITCHEN STEPS AND STOOL





THE KITCHEN CHAIR that can be converted into a step-ladder reappears so persistently (though with many slight variations) that it must surely hold a firm enough place in the housewife's estimation to warrant the appearance in this section of my own idea of it. To make the chapter more comprehensive I am also including particulars of a step-ladder stool.

This idea of making one article serve two purposes is, of course, old and well tried and there are many different designs, some only having the three steps in a height of about 2 feet, and others, like the chair, rising by four 9in. steps to 3 feet, which is more useful for cleaning insides of windows and the like.

With the idea of tackling simple things first, let us consider the stool. It consists of two similar frames made from 1½in. x ⅞in. stiles and 2⅜in. x ⅞in. rails connected with mortise and tenon joints.

Set out the four stiles together to take rails, as shown in the vertical section, and proceed to make ⅜in. mortises and tenons in the usual manner. When these frames are glued up, trenches or housings can be sunk ¼in. deep to take outer edges of two steps as shown.

The two back rails can now be sawn 11¼in. long, and the three steps 13in. long, ready for gluing and nailing in place, a watch being kept all the time that everything is square and out of twist. Do not trust to nails alone, the little extra trouble of gluing will be repaid in the added rigidity of the job through years of service.

Before beginning the chair, examine the vertical section—**fig. 7**—and take particular note of the measurements along the sloping stile. If the ladder is to close correctly into "chair" form, allowance must be made for the thickness of a step or tread to be completely reversed, which means that the measurements must be 9⅞in. and 9in. alternately in each section.

The best way to start is to draw a rectangle 3ft. x 1ft. 10½in. on a sheet of plywood or brown paper and locate the stile by measuring 12in. from the top left-hand corner as indicated. When this is in place a full-size vertical section can be completed by following the measurements given.

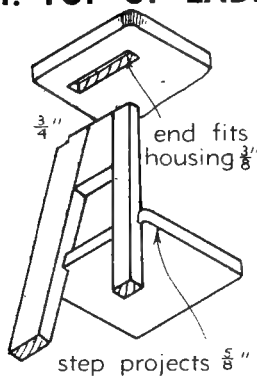
This drawing will be particularly useful when various members are to be marked out, for they can be laid in position whilst necessary housing and other lines are transferred.

The handiest way to buy the timber is in 12in. pine shelving, of which a 9ft. length will be required, together with 2ft. 3in. of 2in. x ⅝in. stuff for the chair back, which will probably be available in the workshop. The board can be ripped into the required widths and will need little further preparation beyond the shooting of edges.

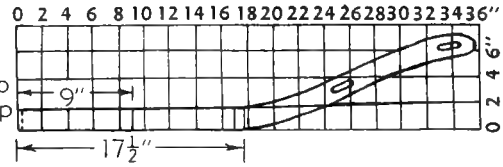
In setting out step housings be sure that the stiles are paired for right and left hands, and, if there is any doubt hold them in position before any sinking is done.

Chisel-cut lines are the only satisfactory ones for ladder joints, especially in light stuff

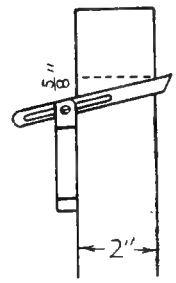
Details of Convertible Chair-Step-Ladder



1. TOP OF LADDER

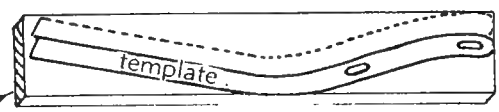


2. PITCH = ⅝" IN 2".

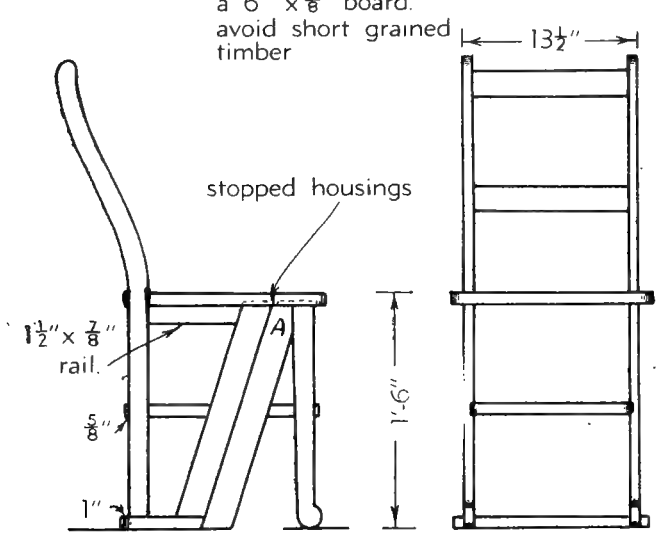


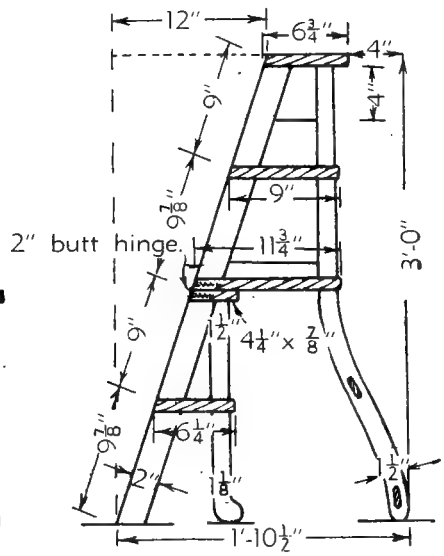
3. & SETTING OUT & USING TEMPLATE

4.

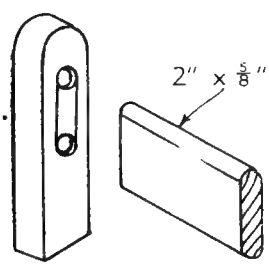


mark two legs on a 6" x ⅞" board. avoid short grained timber





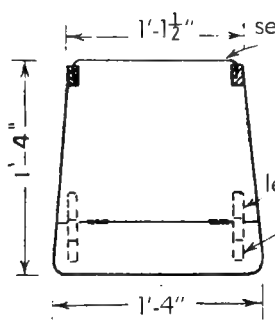
5. SIDE ELEVATION **6. ELEV. OF CHAIR** **7. SECTION OF LADDER**



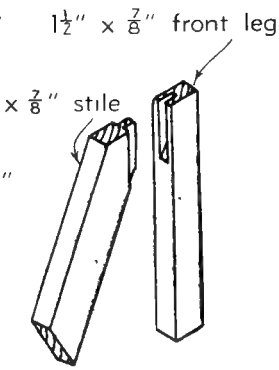
A. bore ⅜" diam. holes to a depth of ½"

B. fix ends with glue and nails.

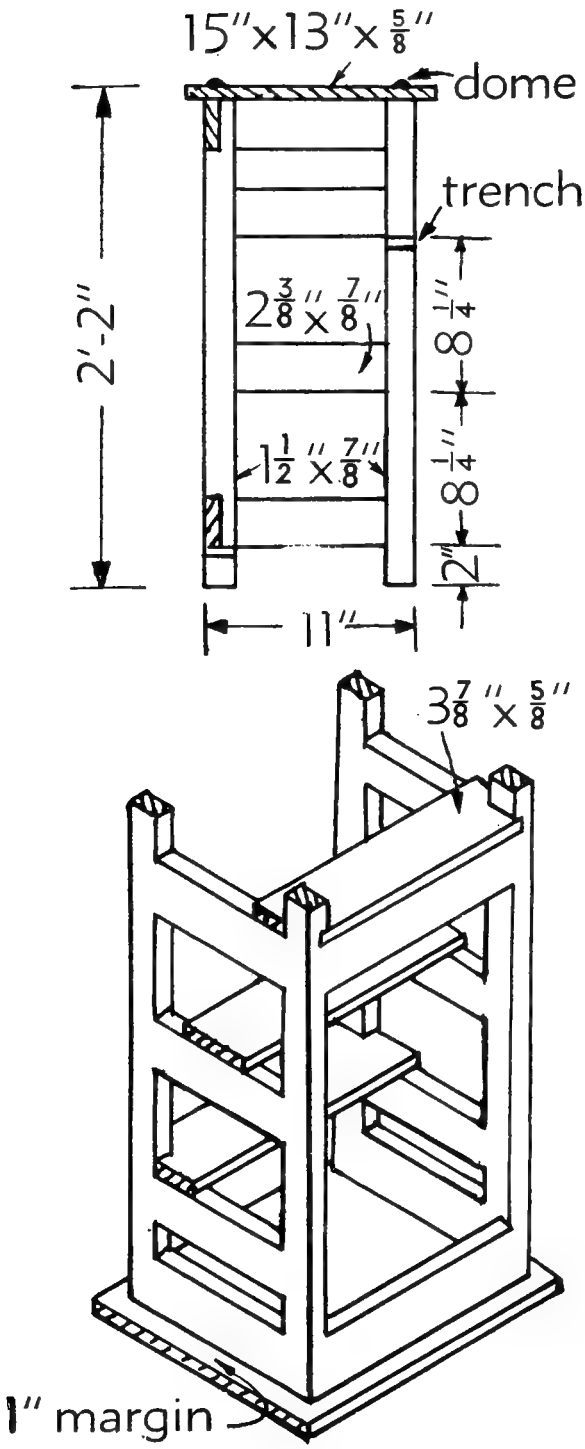
8. HOUSING A BACK RAIL.



9. PLAN OF SEAT.



10. BRIDLE JOINT AT A.



such as we are now considering, for it is only by absolutely accurate fitting that strength can be assured.

The pitch or bevel of the step housings can be taken from the drawing—**fig. 2.** Depth of housing is 5/16in., and it is helpful when sawing and chiselling to have the stile tacked to the bench.

Although the back appears to have a big curve it will be found that if a straight edge is applied across the extremities the actual deviation from a straight line is less than 3in., so there will be little fear of breakage if a straight grained board is used and the template applied as in **fig. 4,** which shows how both legs can be sawn from a 6in. width.

Besides the housed joints which have been described, there will be mortise and tenon joints on the rails immediately below the top step and the seat. Also a bridle joint—**fig. 10**—at position **A** in the side elevation, **fig. 5.** If the joints are good, nailing will be sufficient, but if any slackness is apparent the joints should be reinforced with screws carefully bored and driven to get a good grip in the end grain.

This matter of care when inserting screws into end grain is important. Correct procedure here would be to bore the first portion of the hole just large enough for the screw to slide through it, and then choose another bit about the size of the solid part of the screw near its point. This latter bit will bore a hole that the screw will grip without forcing.

When assembling, nail the two sides of each frame to their respective steps and then hold them in "chair" position by means of temporary braces. The seat can then be fitted around the back legs and marked for the front leg housings. **Fig. 1** shows how trenches will be stopped near the edge to avoid an untidy finish when this portion of the seat becomes a step, and lower in the same detail is an indication that projections will be rounded.

Needless to say there should be no razor edges left anywhere about a pair of steps, but each arris should be slightly rounded if only with sandpaper, so that the job will at all times be comfortable to handle.

Suitable finish can be given to the job by punching nails, giving one undercoat, and then puttying up ready for enamel to match existing furniture.

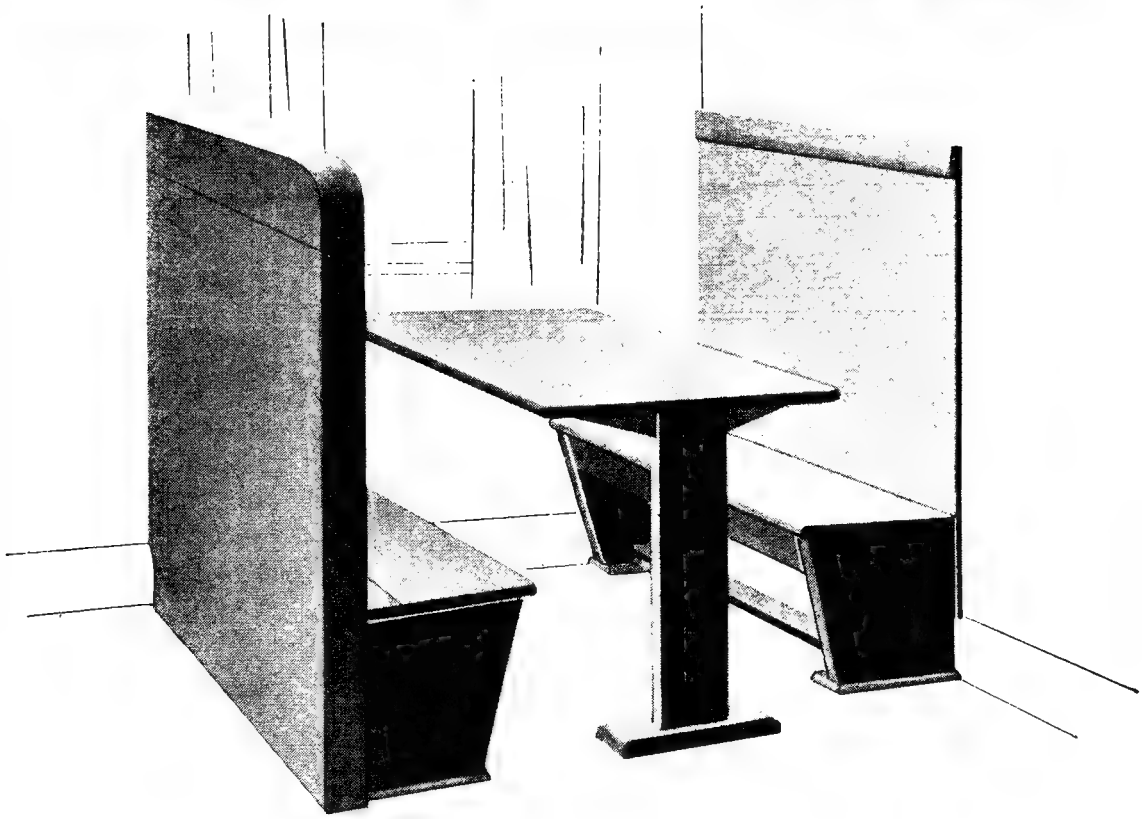
Workshop Wisdom

A smoothing plane iron should be ground square across the end, and the corners slightly eased when sharpening on an oilstone.

A patch of curly grain can be cleaned up by reversing the iron in an ordinary smoothing plane. It then acts as a scraper.

The set or distance of a back iron from the cutting edge of a plane depends on the job. It may vary from 1-64in. to 1-8in. The harder the wood, the finer the set.

CONTRIVING A NOOK FOR MEALS



PROBABLY THE CHIEF ATTRACTION for most of us in new houses and flats is the wealth of ingenious special-purpose fitments they contain, and as we inspect we lament that someone did not think of these gadgets when our own homes were built, 10 or 20 years ago.

Actually, the omission is not so serious as it looks, because there is often a way of adapting special equipment to existing rooms, and arranging it to exactly suit our needs.

In the matter of meal alcoves, for example, it seems feasible that if one of the seats were left loose, instead of both being fixed, as they so often are, the table could be used for ironing and the like during the day, especially as an electrical service plug is usually near at hand.

All this, of course, brings us to the point where we can consider the small kitchen, of which **fig. 4** is the plan of one corner. The arrangement of door and window in one wall is common, and any table in the centre of such a room is exposed to draughts. How much better it seems to screen one corner, so that odd jobs and, perhaps, homework, can be done in comfort.

Actually, the main part of the job is the screen—**fig. 1**—made from clean oregon, halved, and nailed together.

In order to locate the rails, a full-sized section, similar to Fig. 5, should be set out on brown paper, allowing for 3/16in. thickness of plywood on each side, and arranging for stock 3ft. sheets to be fixed, as shown.

The margin of this frame, consisting of the outer stile, and top and bottom rails respectively, will need to be 3/8in. wider than the inner members, and should be rebated as in **figs. 2** and **3**, so that the plywood will eventually finish to a flush surface.

A template for the curved top corner—**fig. 3**—should be cut from card or plywood, and sent to the mill for sawing out of a clean piece of 6in. x 3in. stuff. Note that a straight shank is left on each end so that joints can be squared, and dowel holes accurately bored.

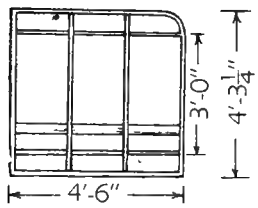
When the framing has been jointed up it can be tacked together on the floor, and the curved rib fitted, after which dowel lines can be drawn across intersections, and later squared over and gauged for boring.

If a guide stick is tacked along the lines, and the 3/8in. bit sighted along it, the holes should coincide exactly, and the rib can later be fixed to the stile and then to the top rail.

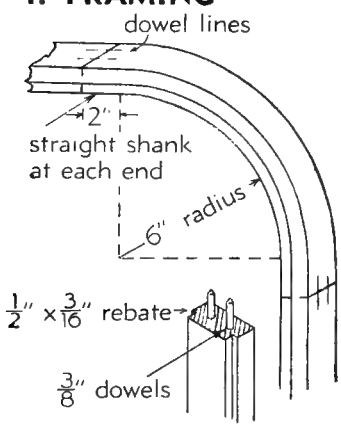
All the main joints are intended to be nailed through from outside, and if a pot of glue has been made for the rib, a dab on other joints will help to stiffen the job.

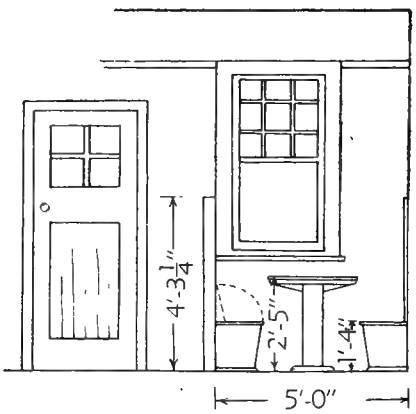
Only the inside sheet of plywood can be fixed at this stage, because the framing must be left

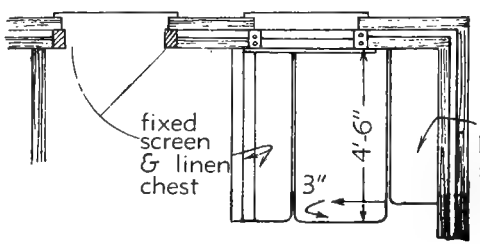
Details of a Nook for Meals



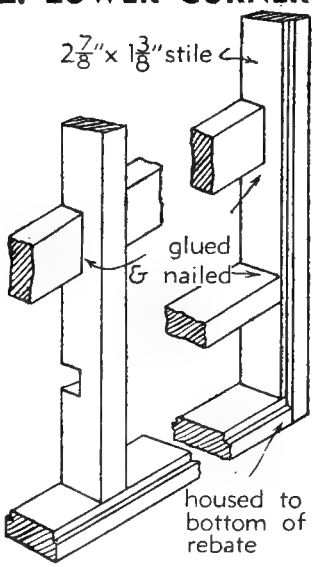
1. FRAMING





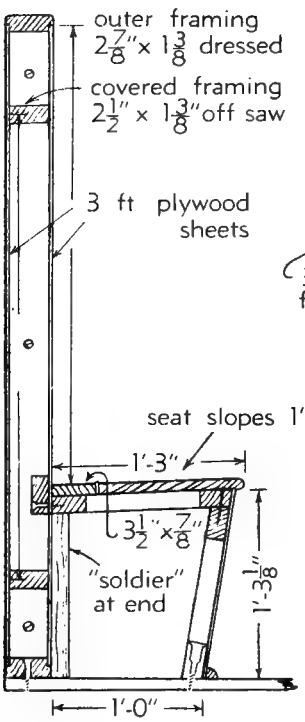


2. LOWER CORNER

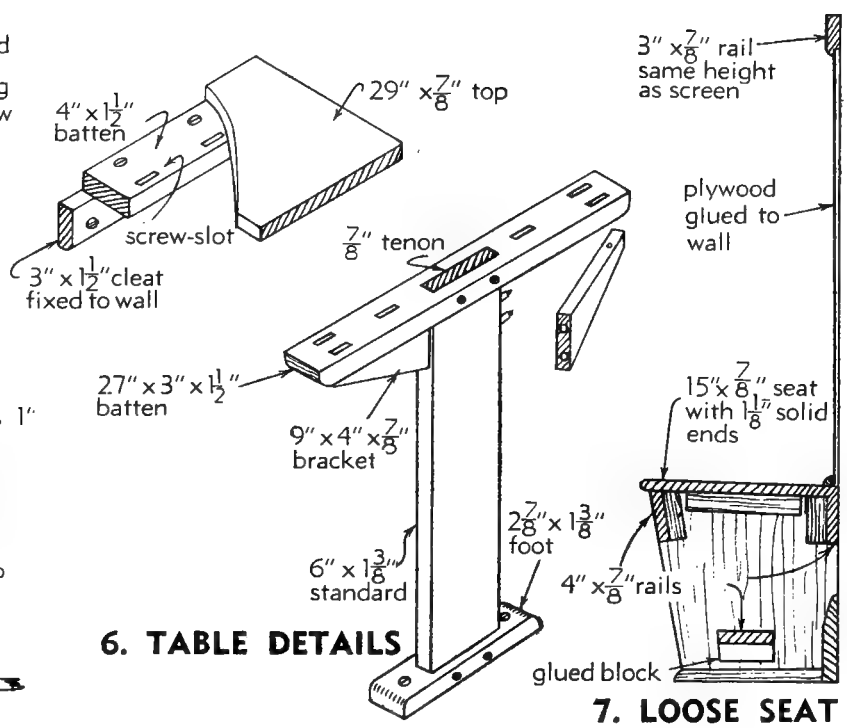


4. PLAN AND ELEV. OF AN ALCOVE

3. TOP CORNER



5. SCREEN SECTION



6. TABLE DETAILS

7. LOOSE SEAT

open until seat frames are screwed on, and the end stud is fixed to the wall. The least disturbance is caused by boring holes in this stud, marking them on to the plaster, and drilling straight into the brickwork for Rawl plugs or Loxin screws, which are available at hardware stores, and consist of metal sleeves, which are driven into the drilled holes, and expand when screws are driven into them.

If a window is as conveniently placed as these drawings show, it will be possible to fix a steel bracket under the window nosing, and fix the screen to that, with the addition of a screw or two into the skirting.

In a weatherboard house, the best fixing is straight into a convenient stud.

Length of seat frames should be arranged so that the quadrant floor mould can be finished against the screen. Bevels and other constructional details will be taken from the full sized set out, and the frame joints can be mortised or halved and screwed.

If the front frame for the seat is made 7/8in. shorter than the top one, it can fix to the skirting, and the plywood facing will afterwards fit closely to the wall; also, screws to the floor should be sunk part way into the bottom rail. **fig. 5.**

The loose seat (**fig. 7**) consists of two solid standards, with rails nailed through them, and stiffened with glued angle blocks inside. It must be short enough to slide easily behind the table leg. Instead of leaving the bare plaster, which would be cold, and likely to whiten clothes, a stiff cold water glue can be mixed, and, after the wall has been sandpapered, glue will be spread on it and on a sheet of plywood, which must be pressed firmly home, and, if need be, held by temporary battens and struts from the floor until thoroughly set.

A rebated dado rail along the top edge will line with the opposite screen, and can, if preferred, be returned down the edge to finish on the seat.

And now for the table, which is somewhat wider than usual for alcoves, and will need fixing so as to provide for expansion and shrinking. At the wall end a level cleat is fixed to plugs or patent screws, and on that a batten with screw slots along one edge, so that the table top can be screwed from underneath—**fig. 6.**

The other end is supported by a standard tenoned through a level batten and a foot, these joints being glued and screwed or pinned, and reinforced by angle brackets made rather thinner than the standard to save cleaning off after assembly. Note the screw slots on this top batten, also the necessity for fixing the top before the brackets, which will be dowelled at one end, and screwed through the other.

Probably the last part of the job will consist of fixing plywood outside the screen. Begin by fitting the 3ft. centre piece to the wall, then tack it lightly, and carefully mark the rebate line for sawing, allowing just sufficient for a shaving along the cut.

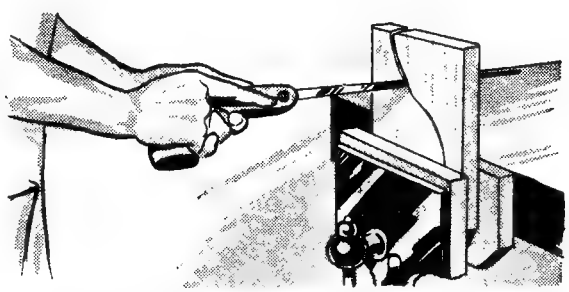
Horizontal edges of the plywood will be shot straight, and chamfered with the plane, so that the upper and lower strips, treated in the same way, can finish in a V joint without any cover strips. If this is done, the whole surface can be enamelled alike, or the narrow strips can contrast.

In closing, perhaps it should be mentioned that the seat height of 16ins. has been designed to allow for loose cushions, also that the term "soldier" used in **fig. 5** simply means a plain upright piece of wood, to which the plywood end covering can be nailed.

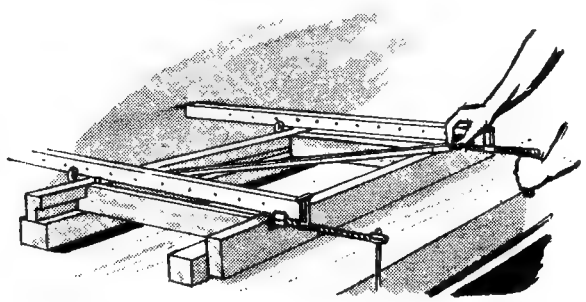
WORKSHOP WISDOM

Cramps, Curves and Squares

It often happens that cramps will bend the stiles of a frame unless these are in some way strengthened, a purpose which is fulfilled by cutting an extra stretcher to the required length and fitting it in the frame. Then comes the squaring.



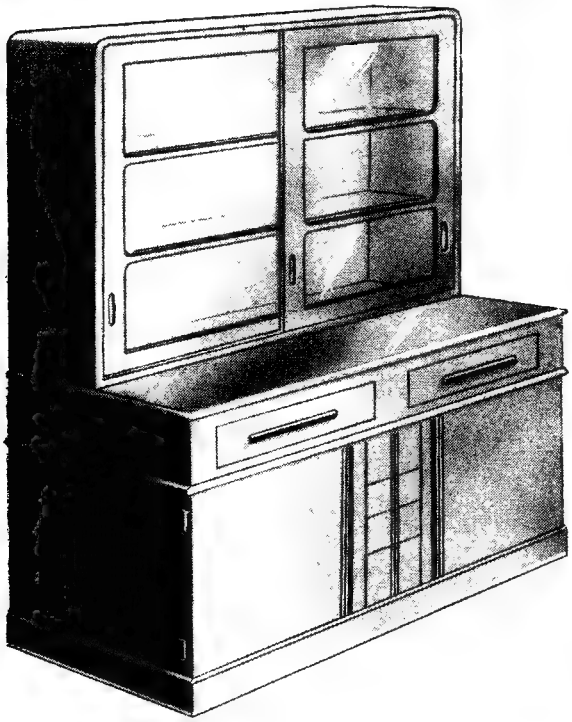
Keyhole or compass saws are sometimes sold as a handle and three blades of different sizes. Fix the piece in the vice, grip the handle with both hands and keep the blade horizontal. Note the index finger as shown in the sketch. It is kept rigid so as to guide the stroke.



When testing for squareness lengths of diagonals are taken on a rod, the centre point marked and the frame adjusted to it. Where sills or other projections are present, the inner or flush edges would be the "face" edges. (See note on "Cramps and Squares" below).

In all kinds of work it is necessary to have the framing "square," and it will be seen that if any of the members are even the least bit bent it will be useless to try the angles with an ordinary try square. The only safe way is to mark the opposite diagonal lengths on a lath and adjust the work until these lengths are equal, the adjustment being accomplished not with sledge hammer blows, but by means of slackening the cramp, moving it slightly out of parallel with the rails, and making it pull the frame square as the screw is again tightened.

REMODELLING A KITCHEN DRESSER



THE TYPE OF DRESSER illustrated at A—traced from a correspondent's sketch—is a familiar one and most of us will agree that its proportions would be improved by reducing its height as at B, and in some way giving the base a wider and less broken appearance.

This can be done by sawing off the ends of the upper carcase just below the first shelf, as in **fig. 6**, and removing part of the main carcase shown by dotted lines in **fig. 7**. The uprights, it is assumed, are the usual 3in. x ⅞in. pieces planted on the front which, when cut out will allow the doors to be hung to edges of the fitment as on wardrobes and bookcases, thus leaving a space of about 9in. in the centre to be filled with very useful small drawers.

Wherever practicable pieces to .be removed are shown in dotted lines and new work marked with a cross, therefore the next cut we have to consider is the middle shelf—**fig. 7**—which in most dressers is so wide that only the front row of goods stored on it is readily accessible.

To remedy this it is proposed to use six trays which, with their contents, can be lifted right out for use on the kitchen table. Small things which so often get pushed to the back of a wide shelf can be stored in racks on the doors, and in this way it is probable that the new fitment which seems considerably smaller than the old one will provide at least equal storage.

The middle shelf when cut in half should suffice for two upright partitions which must be fixed so that the doors will close right over their front edges. Make sure the partitions are fixed parallel by using short pieces of timber as spacing blocks.

With the addition of a 3in. x ⅞in. plinth as shown on several details the general appearance of the lower carcase will eventually be as in elevation 8 and plan 9, but a better grasp of the construction will be possible from **fig. 13**, drawn to a bigger scale. Note here how the top projection has been reduced and a neat moulding worked on the edges, also how a strip of similar moulding is glued just below the top drawers to cover plywood edges when doors are shut.

Before fixing the upright partitions mentioned above plane the door edges to take out the old hinge slots, also lengthen each door by planting a strip along its bottom edge. If the doors are painted reverse them so that plywood can be glued to the clean sides after the framing has been roughened with a toothing plane or a rasp to give a good grip, but before fixing the ply, cut mortises for rack ends as indicated.

If the two doors with their new panels well glued are cramped or weighted face to face with a sheet of paper between there should be no need for brads, and when thoroughly set the surfaces can be cleaned up with scraper and sandpaper.

Tray construction is apparent in 14—first the nailed or dovetailed frame, with a plywood bottom nailed and glued on, then a strip of ⅝in. x ⅜in. hardwood underneath to protect the ply and run on ⅝in. x ⅝in. cleats, screwed to the carcase.

Fig. 10 shows how a door will appear when hung, and in **11** there is a suggestion for simply made drawers to suit the central opening. When rebating the fronts, one makes a cleaner job by sawing right through and gluing a small piece near the bottom than by stopping the rebate and trying to clean it out with a chisel.

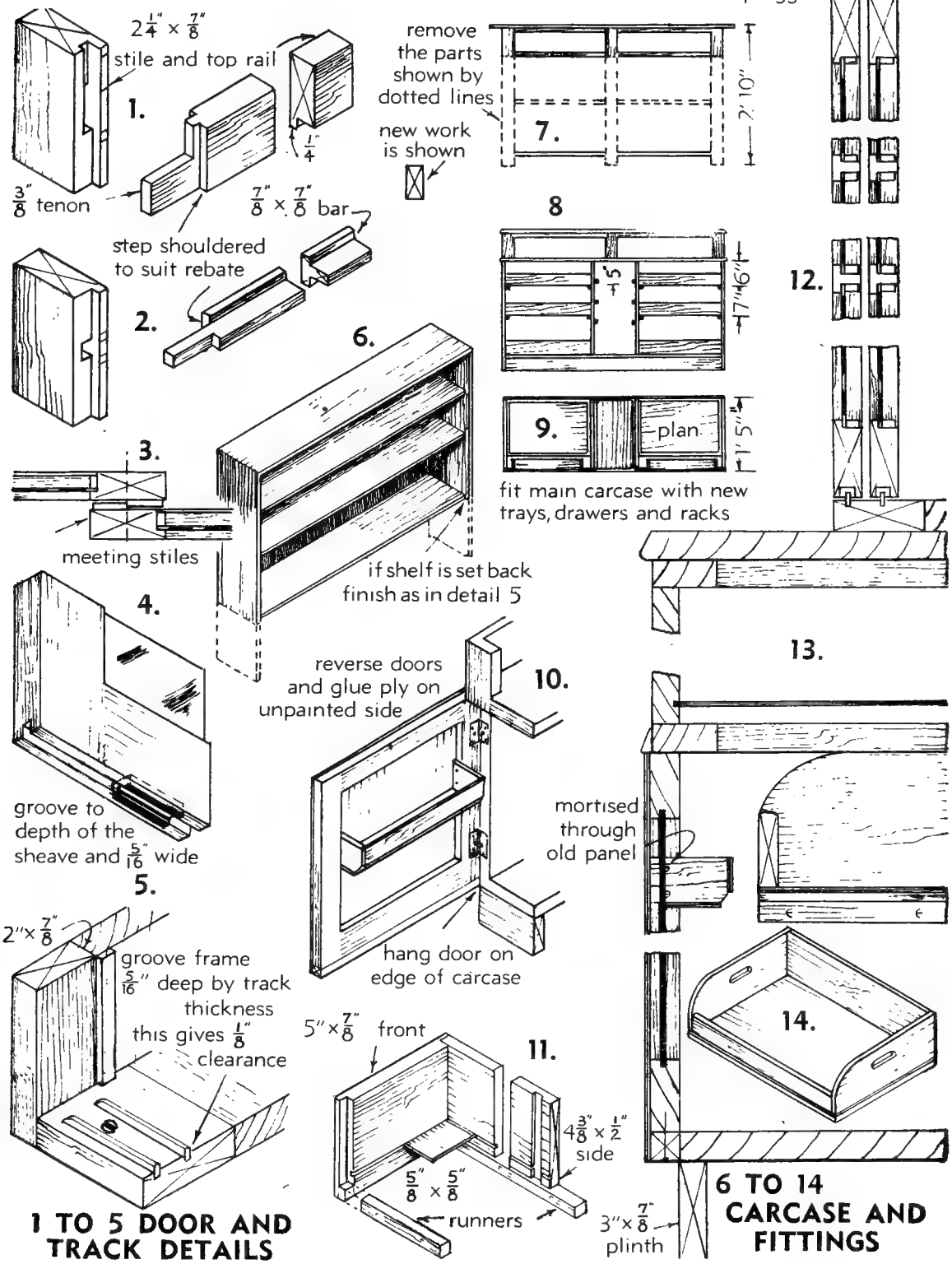
Turning now to the upper carcase, it is assumed that shelves are narrower than ends—but not sufficiently so to allow for sliding doors without any addition. The solution is to make a dovetailed frame with 2in. x ⅞in. sides and top, and the necessary width at the bottom—**Figs. 5** and **12**.

The track recommended is known as "Noiless," and consists of prepared laths, like black Masonite in appearance, which run in sheaves of the same material. For ⅞in. doors in 2in. framing, the grooves would be ploughed 5/16in. from outside edges, thus leaving a quarter inch of clearance for stops on the meeting stiles shown in **fig. 3**. This grooving must be done before framing is assembled, and for ease in subsequent cleaning it is suggested that the grooves be stopped short of the ends, or run through and afterwards plugged up to finish, as in **fig. 5**.

Door joints are shown in **1** and **2** with the mortise set out on stiles to show allowance to be made for rebated rails and bars when cutting the mortises. Tenons, 1½in. long, if well fitted and glued, should hold, but if there seems any doubt, screw them from inside the doors, and make sure, because they will be subject to strain during constant movement.

Well-fitting track laths and sheaves need no nails or other fixing, but the latter need slight reduction in width to suit ⅞in. doors, as

Details for Remodelling a Kitchen Dresser

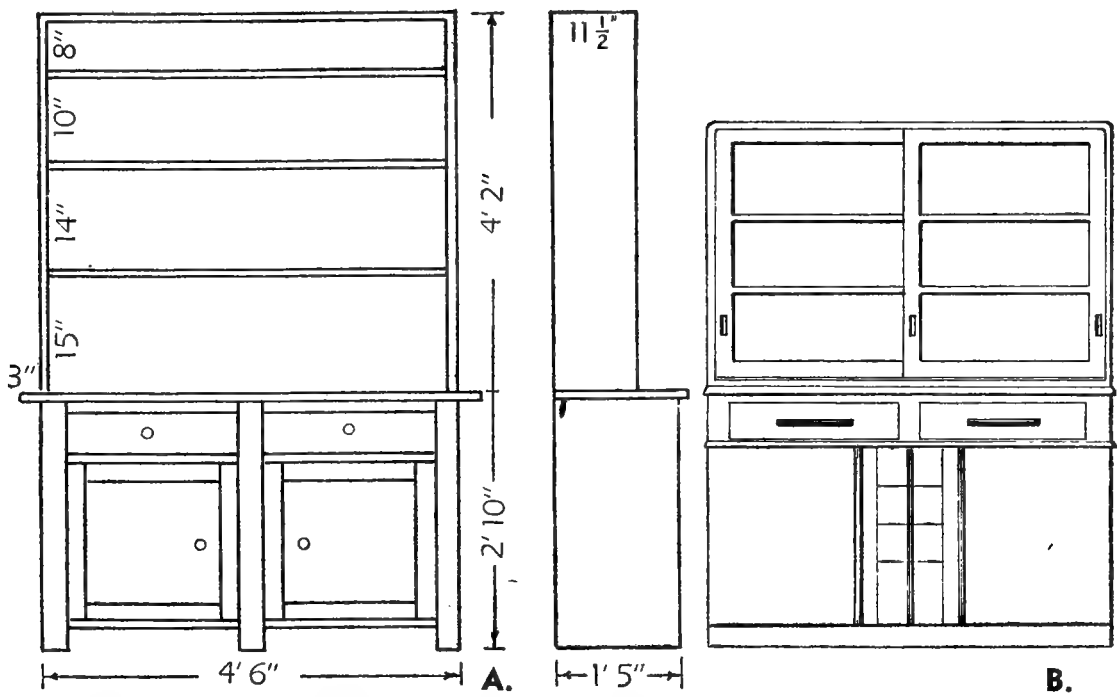


they seem to have been designed for 1⅛in., or thicker.

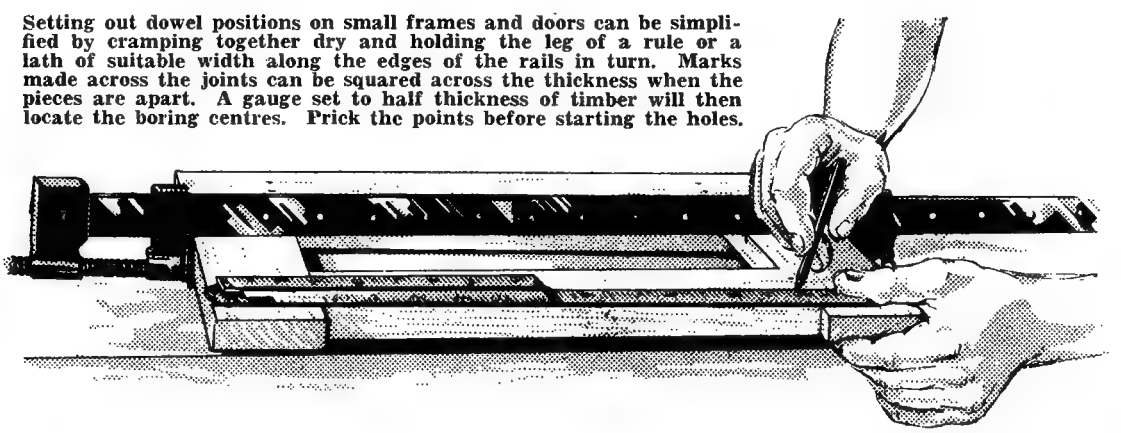
Before finally inserting the top laths, drop the inner door on to its track, and run it along to both ends to make sure of sufficient clearance, then push the door to one end and slide the lath into place, following on in the same manner with the outer door, and noting that both fit nicely against the carcase when closed. Stops on the meeting stiles — **fig. 3** — should have 1/16in. clearance, so that door surfaces will not be marked when sliding, and dust beads will be fixed on the carcase ends to suit one or other of the doors which will close against them.

Glass may be clear or "obscure," depending on whether it is desired to make a display of smart crockery or cover a mixed range of cookery requisites. Handles for sliding doors may be of the variety known as "flush pulls," to be sunk level with the surface (after a trial on a spare piece), or may be carved out of the stiles themselves. Those for the hinged doors and the drawers are strips of ⅞in. x ⅝in. hardwood, bevelled slightly inward for a grip, and screwed from inside. Those for the drawers are, of course, cut across where necessary. Bevelling small sections like these handles, and the moulding just above the door in **fig. 13**, is best done with the pieces tacked to the edge of a board, which can be gripped in the vice; fine brads being used, and punched low enough to miss the plane.

From the foregoing, it should be a reasonably straight-forward job to make alterations to a wide range of old-fashioned kitchen furniture, and, without wasting any of the fine timber from which so much of it was made, produce jobs more acceptable to the housewife of today.



Setting out dowel positions on small frames and doors can be simplified by cramping together dry and holding the leg of a rule or a lath of suitable width along the edges of the rails in turn. Marks made across the joints can be squared across the thickness when the pieces are apart. A gauge set to half thickness of timber will then locate the boring centres. Prick the points before starting the holes.



HOW TO SET OUT YOUR JOB

AS FROM TIME TO TIME I REVISE these constructional articles, I find that I have used such phrases as, "The job should first be set out," "set out a full-size section," "prepare a cutting list," etc., without taking space to explain what a workshop set-out really is and why it is important.

A good many readers are, of course, quite familiar with workshop drawings, but perhaps all of us are the better for periodically taking stock of our methods with a view to possible improvement.

Let me say at once that a setter-out does not aim at producing a picture, but contents himself with showing, in the fewest possible lines, the sizes and positions of the various pieces in a job. The tools he needs are few: a couple of pencils, a rule, a square, a pair of dividers, and a thin board being sufficient for most purposes, with the occasional addition of a straightedge and a mortised stock for his rule, such as is shown in **fig. 10.** It is most essential that the board should be clean and flat and have one edge perfectly straight, also it is the practice among men who are constantly drawing to kalsomine their boards and thus obtain a matt white surface.

For most work, however, a board cleaned up with a smoothing plane and sand-papered across the grain will suffice, and even in private workshops it is worth while to keep two 7ft. lengths of 12in. x ½in. pine on a rack where they will stay flat.

Such boards are big enough for most of the doors and fittings that need to be handled, and if, occasionally, a wider job comes to hand, the two boards can be connected with light laths tacked across the back. Whether the surface be large or small, the board, with its completed drawing, is known in workshop parlance as a rod.

A good rod will show in two separate full-size drawings the height and width of the job which is to be made and will give a cutting list with names, numbers and dimensions of the pieces of timber required.

For all simple jobs these would be sufficient, but if any portion of the work differs from the remainder a sketch elevation should be added, it being obviously difficult to indicate in two sections the real shape of such a job as the skylight on this page or the glazed panel of the door which we are presently to consider.

When it is remembered that in most big shops a setter-out is kept busy preparing rods for other men to use, days or even weeks later, it is surely true that time spent on making a rod complete is better than time wasted in answering questions when his attention is on something else.

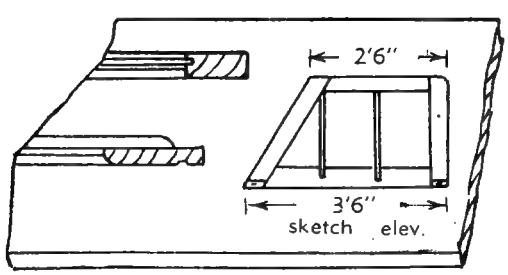
The two main drawings are usually "sections," which means that the setter-out visualises what the finished job would look like if sawn "Heightwise," and calls that view a vertical section, and then he imagines the job to be cut across and names that the "horizontal section." The mental process can be readily understood if readers will look at a room door and imagine themselves sawing it down the middle, removing one half and looking intently at the sawn edges.

At once the whole height is visible, and true shapes of all rails, including grooves for panels, rebates for glass, and any mouldings, can be distinctly seen; also if a replica of these were drawn on a long board it would be possible to lay a new door stile on the drawing and mark out the position of every mortise.

The same mental process applied to a cross-wise cut would show the door's width, also the size and spacing of its muntins or inner vertical members; therefore, these, too, could be transferred to a rod and used for marking rail shoulders and mortises for the muntins.

A glance now at **fig. 1** will show that here is an example for which one cross section would not be sufficient because of extra members near the top to take the glass.

Instead of setting out two separate sections, however, this kind of difficulty is overcome by setting out two half sections as in the upper part of **figs. 8** and **9,** where upper and lower portions of the door are set out on each side of the centre line and the right hand muntin is indicated by dotted lines only. Such a job as this should certainly be accompanied by the blue print or a sketch on the rod, so that the workman can see at once what is required. Lines across the sketch in **fig. 8** indicate where the cross sections have been taken.



ref.	item	size	material	no	length	details
		in. - in.			ft. in.	
1	stiles	4¾×1¾	kd. hdwd	2	6 9	dd 4 sides & rebated
2	top rail	4¾×1¾	"	1	2 5½	½"×5-16th"
3	btm rail	9½×1¾	"	1	2 5½	
4	int. rails	3 ×1⅛	pine	4	2 5½	dd 2 sides
5	muntins	4 ×1⅛		2	1 8	" "
6	panels	23½×¼	walnut	2	5 6	sanded 1 side
7	mould	⅝ × ¼		2	15 0	

Cutting lists do not always appear on rods but I am strongly of the opinion that they should.

A list on a large board is unlikely to be lost, it gives everyone connected with the job an immediate knowledge of what each piece of stuff is for and saves time and confusion when two or more men are working together.

Most joiners will remember occasions when a poor rod and the absence of a cutting list have led to errors and bitterness and will agree that even in shops where lists are typed a copy pasted right on the rod instead of lying loose would be better for all concerned.

The lay-out of cutting lists is not uniform but after many years of preparing them I recommend the one shown here for the following reasons.

1. It agrees with the general run of specification. E.g.: Stiles to be 5in. x 1½in. hardwood, or Studs to be 4in. x 1½in. hardwood.

2. It agrees with many invoices. E.g.: Size, material, lengths, 4in. x 1½in. hardwood, 4/20, 2/18, 5/10.

3. It brings lengths near to details or remarks which usually apply to lengths rather than to sections. E.g: 1-18ft. cuts four.

4. It makes it easy for a foreman who has ordered stuff to pass on a cutting list to his carpenter. E.g.: An item of flooring or similar section might be detailed as—10/18ft., 1/16ft., 4/12ft.—living room. 8/14ft., 3/12ft., 5/10ft.—kitchen; and so save wrong cutting or time wasted in sorting a load.

5. In shops where cutting lists are typed it seems better to separate lists of figures where possible.

Personally I have found this form to be elastic and, as lists in previous articles will show, have been able to deal with a wide variety of materials and instructions under the same general headings. But whatever form is adopted, the main aim should be absolute clearness.

The column marked "Reference" is not important to the home worker. In cabinet factories where full size elevations of work are regularly prepared, the reference numbers appear on the drawings, so that the machinist may write corresponding numbers on the pieces as he prepares them. In some jobs there might be rails, stiles and muntins of similar section and nearly alike in length, therefore, a ready method of sorting the groups is most necessary. If 50 doors were being prepared, all stiles would be numbered 1, top rails 2, etc.

In many shops no waste length is allowed anywhere, but in others ½in. extra on each end of stiles and ¼in. on each end of rails that run through is common and is the general standard I use for these articles. Here, and for most polished jobs, no rails run through, and neat lengths are listed. Widths and thicknesses are listed as they would finish from the planing machine.

And now as the example, which may be better than all general talk, shall we set out the door in our drawings?

SETTING OUT THE DOOR

Figs. 5 and **10** show how lines parallel to the edges would be drawn and, as the door is 1¾in. thick, rule two of these lines 1¾in. apart and 6ft. 8in. long. Then set off bottom and top rails to the widths specified, remembering that a member nominally 10in. wide will actually be no more than 9⅞in. if dressed on one edge or 9¾in. when two edges are dressed.

Inner cross rails on jobs of this kind need not be dressed on edges, so can be allowed full width, but their spacing will depend on the size of the glazed panel and the two upper ones must be taken from a separate drawing on a piece of plywood, from which a template for the elliptical opening can later be cut. See **fig. 4.**

Before these are drawn, however, other long lines denoting panel thickness should be ruled, then the upper rail positions are lightly marked, the remainder spaced equally and all marked in clearly with a square from the edge of the board.

Fig. 6 shows a portion of the rod enlarged and indicates that wherever possible pieces of the actual stuff should be used as patterns or, failing that, it pays to trace a detail from the original drawing and paste it on plywood ready for cutting to shape.

When this vertical section is complete it should at once be labelled "Height" and the finished height with any necessary intermediate dimensions figured upon it.

The horizontal section can be similarly drawn and dimensioned, it being understood that in any discrepancy between drawing and dimensions the figures are final.

Figs. 9 and **11** show how the rod is used in marking the stuff. In a polished door of this type the tenons would not run through the stiles, and lines indicating rail ends are marked across the section. Also it often pays to run light lines across rails to indicate mortise positions so that when the pattern stile or rail is laid right on the rod any allowance for rebates, haunchings and the like will be seen at once.

TO SET OUT ELLIPSES—FIGS. 2 AND 3.

Fig. 2.—Approximate Ellipse drawn with compasses or rod.

1. Draw major axis a.b. and semi-minor axis c.d.

2. Subtract semi-minor axis from half major axis.

3. Set off difference in length from c. to e.e.

4. Bisect a.e. and b.e., then g.f.f. are required centres

5. Use radius g.c. for lower half also.

Fig. 3.—True ellipse drawn with pins and string

1. With radius a.d. and centre c. cut major axis at f.f.

2. Drive pins at ff. and c. and connect with fine string.

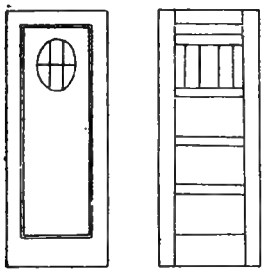
3. Remove pin from c. and trace curve with a pencil.

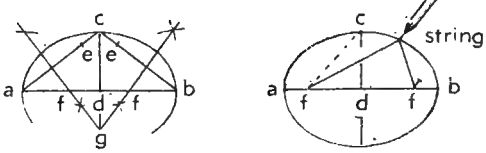
Points

It is sometimes necessary to clinch a nail. For example, if you are nailing a cleat across a ledge door the thickness will probably be 1¾ in. Two-and-a-half-inch nails should be driven straight through and the projections turned down with the grain and punched below the surface. Alternatively two-inch nails driven in on a slant in opposite directions will provide a tight grip.

SETTING OUT YOUR JOB

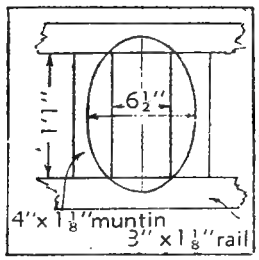
1. DOOR AND FRAMING

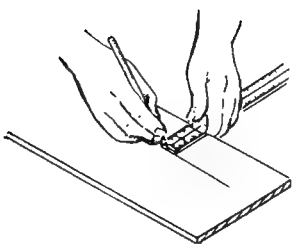




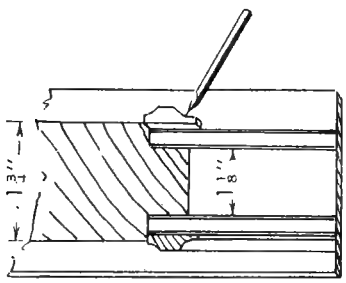
2 AND 3. DRAWING AN ELLIPSE

4. LOCATING MEMBERS

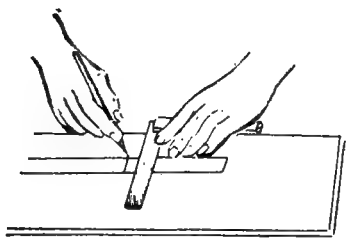




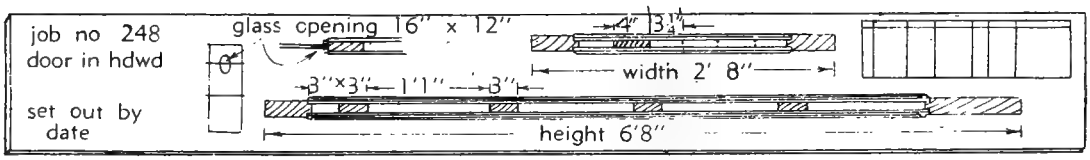
5. FINGER GAUGING



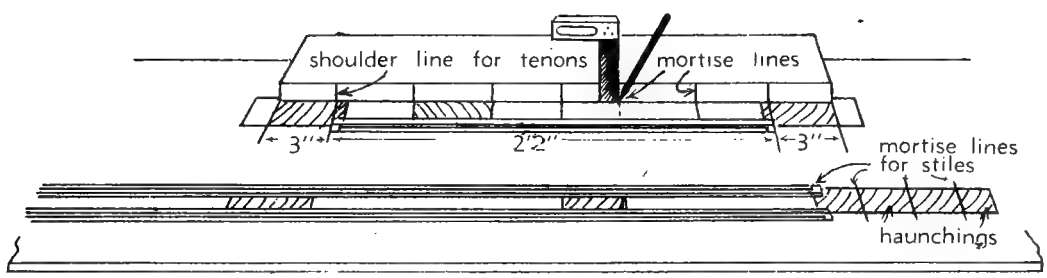
6. USING A PATTERN



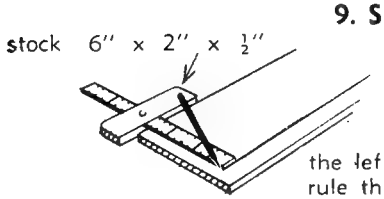
7. SQUARING LINES FROM EDGE OF ROD



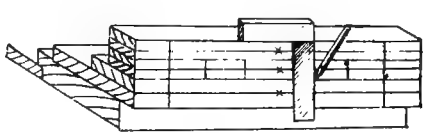
8. TYPICAL SET OUT ROD FOR FLUSH DOORS



9. SETTING OUT A PATTERN RAIL



10. RULE GAUGE OR LINER



11. MARKING FROM PATTERN

ASSEMBLING YOUR JOB

THE IDEA IN THIS ARTICLE IS to provide a collection of drawings that show methods for assembling the prepared parts of different jobs. The page opposite might often prove useful if pasted on a card and tacked to the workshop wall.

A methodical worker may use a system of marking the parts but for the average amateur it is easy enough to get in a tangle when putting the parts together — in other words, assembling the job.

Actually the correct assembly is governed by three simple rules: 1—Decide beforehand how it is to be tackled. 2—Lay all the equipment handy. And 3—Don't rush.

Nearly always one requires a flat, clean surface on which to lay the job, and however well kept a bench top may be it pays to use a pair of clean battens which can be "sighted across" and if necessary packed up at one end to bring them into line or, as the joiners say, "out of twist."

Note these in **fig. 1** also the indentification marks on the joints to make sure that edges planed to fit each other are not reversed.

Battens used in this way not only help to keep twist out of the job but lessen the chance of its being marked by particles of grit on the bench top. As it now lies in place the table top shown has dowels driven into one side of each joint with the surplus glue about the dowels wiped off, and when the joints themselves have been given a thin, even coat of glue a pair of T-bar steel cramps will make short work of pulling them together.

Fitting a Shoulder

In intricate work, especially when moulded members must intersect, it pays to make a trial fitting before assembly. Usually the easiest way is to cramp the mortised piece in the vice, fit the tenon into it and test the alignment with a short straightedge. In this way the workman can see at once whether it is mortise, or tenon, or shoulder that needs easing to make a perfect joint that is out of twist.

Failing the steel cramps, which too seldom hang in pairs around a home workshop, there is little wrong with the wooden ones in Fig. 3, and in fact a set of these are good auxiliaries at any time for they can be left on a job whilst steel cramps are put to more immediate use. One pair of battens slipped beneath the boards in **fig. 1** and the other pair on top can be quite comfortably handled and the wedges made of jarrah with only very gradual taper have surprising power.

Sometimes it happens that such a job as a trellis gate is too big or two awkward to cramp in the usual fashion and resort is made to the method shown in **fig. 2.** Here 6in. or so of extra tenon length has been provided and a hole bored with its centre corresponding to the edge of the stile. If a tapered dowel, or better still a steel draw-pin, is driven in the hole it will pull stile and rail together and hold them there for nailing or fixing with wooden pins.

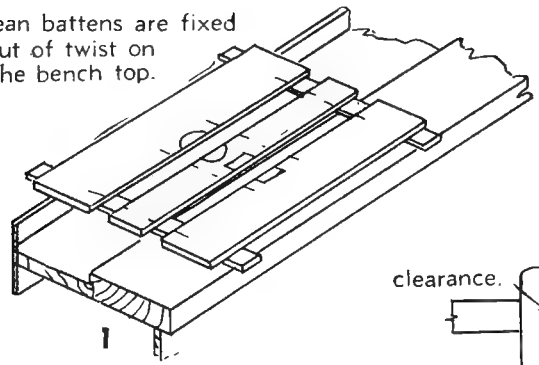
For such jobs as fly screens and sashes which should not require powerful cramps, a home-made pair which could be made for a shilling or two is shown in **fig. 4.** Screwed to the bench out of twist and with the wedge ends clear of obstruction the back stops can be slid into place, bolted tightly against plates on the underside and the screen with tenons and mortises already glued can be dropped into place. Note the stretcher which prevents narrow stiles from being bent during cramping also the squaring lath with a nail driven right through one end so that it can rest in the angle while diagonal lengths are tested. Squaring should be done whilst the pressure is on so that a tap with the hammer on one end will not rack the frame unduly but will shift that corner the little that is required. The right way to use the lath is to test and mark both diagonals and make a final mark midway between the two before attempting any hammering, so that the adjustment is sure to be in the right direction.

Another method of squaring when one is using bar cramps is to loosen them a little, shift their handle ends to left or right as may be required and tighten up again, when the tendency of the cramps to pull along the shortest possible line will move the job in the required direction and will be under better control than when being hammered.

Remember when mortising for the wedge to leave plenty of clearance in front — see small sketch — and to taper the wedges gradually as mentioned above, because steeply pitched wedges tend to jump and loosen when driven. When dealing with book troughs, small stools and the like it is often difficult to place ordinary cramps where the pressure is most needed. The device shown in **fig. 5** is a relative of **fig. 3** and can be placed anywhere on the end, with, if necessary, a plain board packing on the other end to prevent marking. On such jobs as card tables, where a margin of wood is to show around a green baize surface, it is difficult to get good results by straight cramping because one mitre tends to be pulled past the other. This can be dealt with by gluing triangular blocks outside the mitres and letting them tho-

ASSEMBLING YOUR JOB

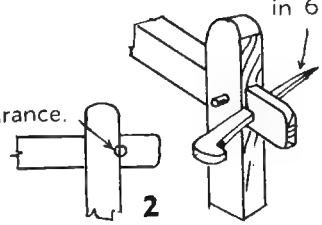
Clean battens are fixed out of twist on the bench top.



1

pin tapers $\frac{1}{2}$" to $\frac{1}{8}$" in 6 inches.

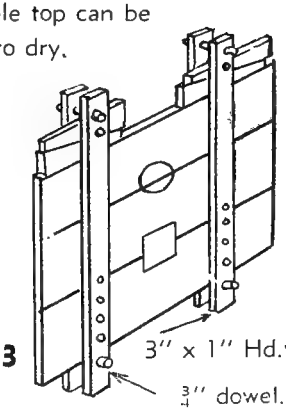
clearance.



2

Gate tenons can be pulled up with draw-pins.

Cramped this way a table top can be left to dry.

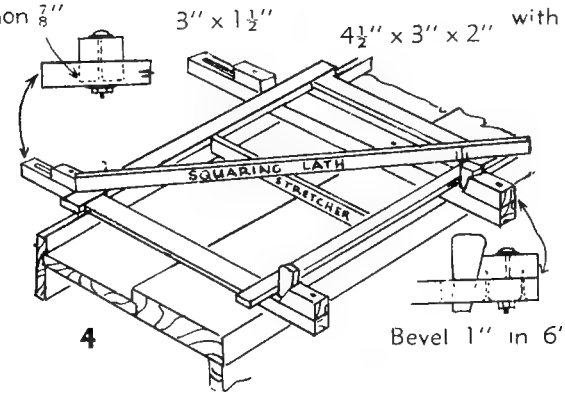


3

tenon $\frac{7}{8}$"

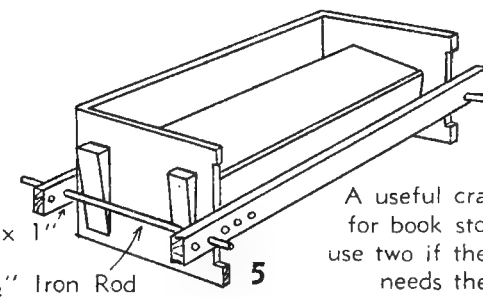
3" x $1\frac{1}{2}$"

$4\frac{1}{2}$" x 3" x 2"



4

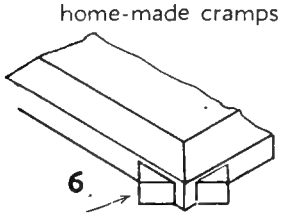
Bevel 1" in 6"



5

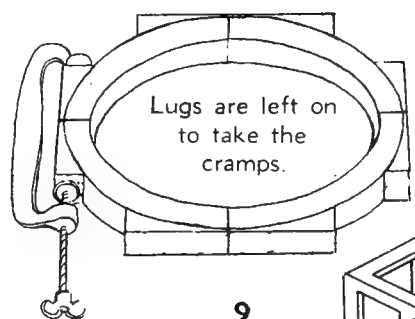
A useful cramp for book stools; use two if the job needs them.

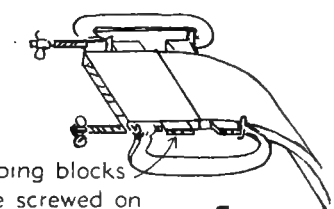
Fly screens can be assembled in home-made cramps like these.



6

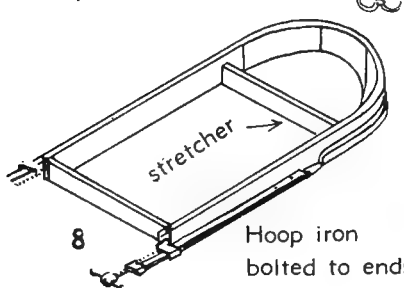
Cramping blocks for a mitred margin are glued on and planed off later





Cramping blocks can be screwed on edges that will be covered.

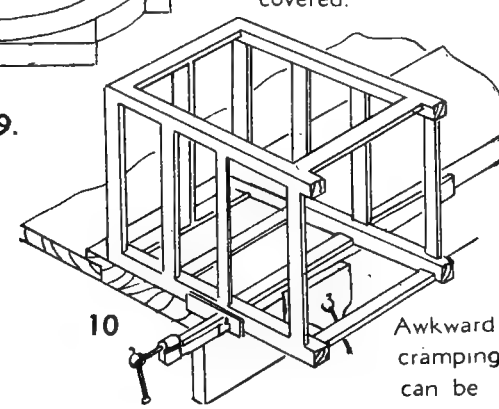
7



8

Hoop iron bolted to ends of cramps will do this job.

9.



10

Awkward cramping can be simplified this way

roughly dry before gluing the margin itself into place and pulling the joints together with "G" cramps. Also, when curved sections are to be attached to straight ones and the edges will subsequently be veneered, the blocks can be screwed into place to save delay, but the holes must be filled before veneering or they will show on the finished work.

Another variation of the blocks and cramps is to leave square sections or lugs on a frame when sawing it to shape. Such a one as **fig. 9** would have dowelled joints, and the procedure would be to glue dowels in one side of each joint first, then cramp top and bottom joints together and later tackle the ends with the frames lying on battens or a flat board. Don't cut lugs too short or they may break off.

Circular work always presents problems which are overcome in the workshop by such devices as rope tied around the frame and tightened by wedges or a stick twisted as one tightens a bow saw. Or again one may run a hoop-iron band around the frame and tighten it by bolts through holes in the ends. When only a portion is curved a length of hoop-iron may be twisted at the ends and punched to bolt on a pair of sash cramps, as shown for the frame of a bagatelle table in Fig. 8. Also, note again the stretcher to prevent collapse when the pressure is applied.

In **fig. 10** a method common among chair makers is illustrated, though in this case the job is a cabinet to be covered with plywood. The two sides here would be first assembled on a flat surface, then, instead of awkwardly shifting a pair of cramps from place to place, one cramp is fixed in the vice and the carcase with all joints glued and knocked together can be shifted along the bench whilst each rail is pulled up separately. If the dowels fit as they should they will hold and the cramps need not be left on but it is usually necessary to go over the job once to squeeze surplus glue out of the joints and again for the final tightening whilst the workman repeatedly sights across the framing for any sign of twist. The advantage of this method is, of course, that the job is supported in a convenient position and the sight of a chairmaker handling jobs with most of the shoulders bevelled and maybe a curved back is ample recommendation for the method.

And now about the glue itself. Hot or cold? Thick or thin? In my own workshop there is always a tin of cold water glue powder ready for jobs which are not needed in a hurry and which can be left in cramps. Given these conditions it will stick very well, and though it is in the first place soluble in water it seems to resist weather better than hot glue and so is more suitable for such jobs as fly screens.

For such a job as **fig. 10,** however, which needs to stick almost at once I prefer thin hot glue, not heated repeatedly until its strength is gone, but freshly mixed and thin enough to run from the brush in a continuous stream without lumps as one tests it over the glue pot. Glue inside dowel holes as well as the dowels themselves and leave no surplus around the edges to set and keep the joints apart and, may I repeat the assembler's golden rule? Have everything ready, don't tackle too much at a time and don't rush.

WORKSHOP WISDOM

Tips About Screw Tops

When drilling a hole for a screw, especially in a job that requires care in handling, first bore to the gauge and depth of the shank, then make a "starter" for the thread with a smaller drill, and finally countersink just deeply enough to take the head — or deeper if the head is to be concealed. A smear of soap or fat will not only help to ease the screw on its journey, but will make its withdrawal easier if it has to be removed later. A good general rule to to bore "slack" for the shank and "tight" for the thread.

Using the hammer to drive in screws is not good practice for the cabinet-maker, though a tradesman working against time will often use "the American screwdriver." and then screw up with the proper tool.

It is sometimes possible to deepen the slot in a worn screw with a hacksaw so as to give the screwdriver necessary purchase.

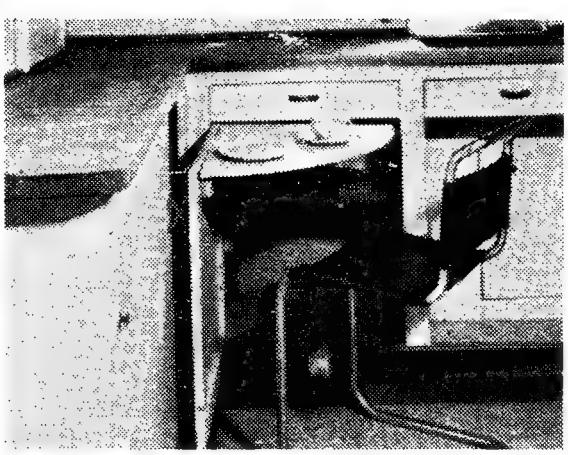
In a repair job such as replacing door hinges, a screw that has worn the hole so big that it has lost its grip can be made to function by filling the screw hole with a wooden peg, preferably glued in.

On the contrary, there are several methods of dealing with stubborn screws that need withdrawing.

If the screw is covered with paint or has become rusty, give the screwdriver a smart tap with the hammer; this will shatter the film of paint or rust and simplify the job.

A few drops of a very thin oil, appropriately named PENETRINE will often loosen a screw or a nut that has rusted on. A specially obstinate fellow may be loosened by applying a red hot poker or very hot soldering iron to the head; this may expand the screw enough to crack the rust or paint and give the screwdriver a chance. If he still won't move, place the point of a fine punch, or a four-inch nail, against the top left corner of the slot and tap persistently with the hammer till the head begins to move.

A Novel Shelf



This is an idea that a handyman could adopt— a shelf fixed to the top of a door. But note—don't close the door before clearing the table.

Hints to the Handy . . .

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A Simple Clothes Horse

THIS NEW STYLE OF clothes horse which will fit away into a few inches of space is made from a piece of dowelling — an old broom handle will do quite well — a couple of odd pieces of wood, six 3 ft. lengths of 3/8 in. dowel, and some small hooks and eyes. It might be as well to bore your holes in the broomstick and take it along with you when you buy the dowels. The point is that dowels vary in thickness, and the ones you want will have to slip fairly easily through the broomstick holes.

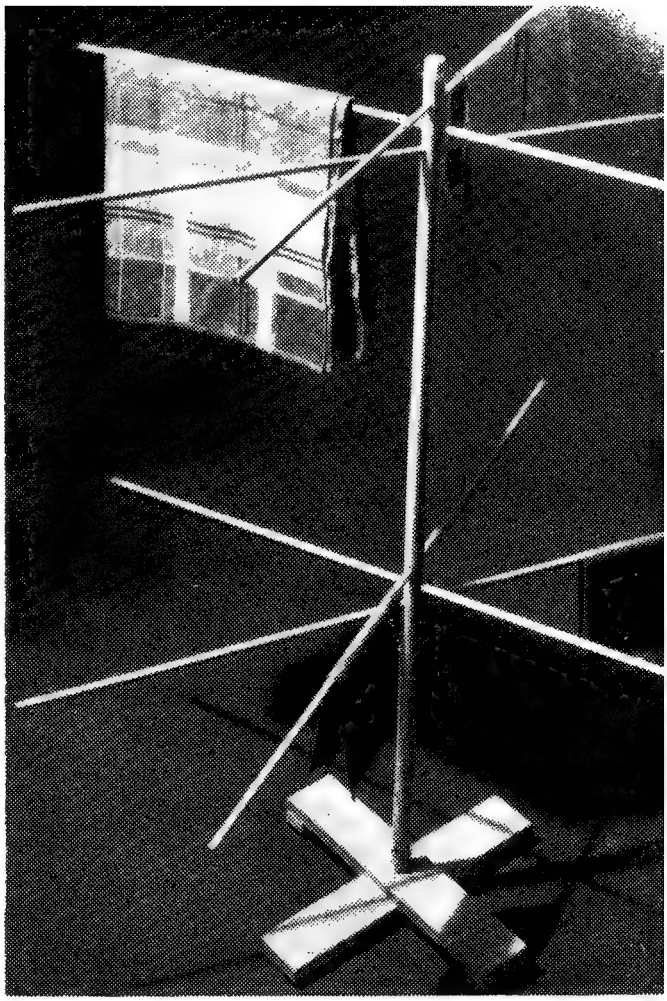
If you cannot get dowels small enough you can scrape them down with a piece of glass, or sandpaper them.

To get a hole in the base deep enough to hold the post upright, only the top half is notched, and the pieces are glued on the end to make up the difference. Glue and nail the base together and when you bore the centre make sure the hole is upright.

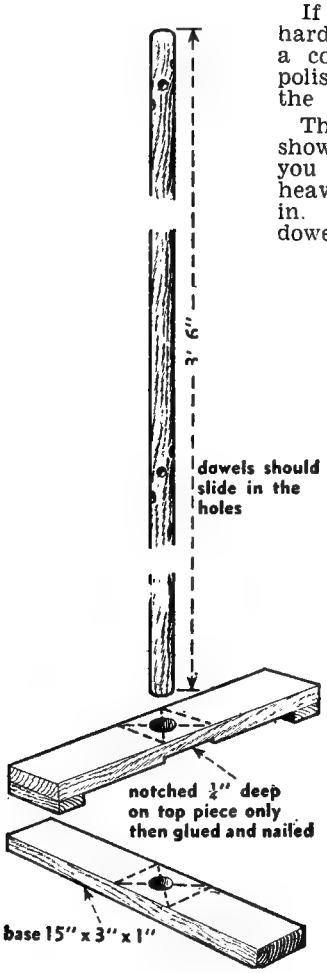
Each dowel will have a screw eye in one end, and small hooks or screw eyes slightly opened with a punch will serve to hold them round the post.

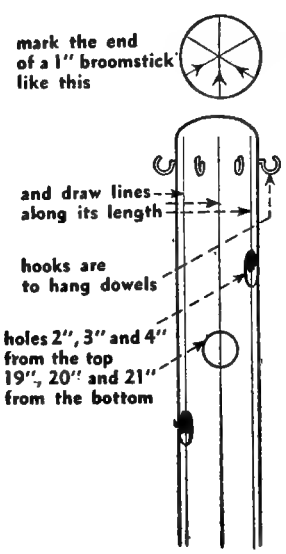
If the dowels are hardwood they will need a coat of thin French polish or they may stain the clothes.

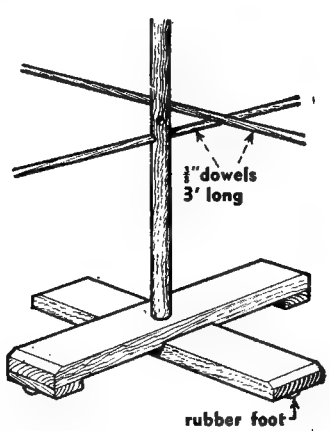
The broom handle shown is 1 in. thick. If you need the rack for heavier clothes use a 1½ in. post and 5/8 in. dowels.



Simply-made clothes horse which fits into a corner when not wanted.







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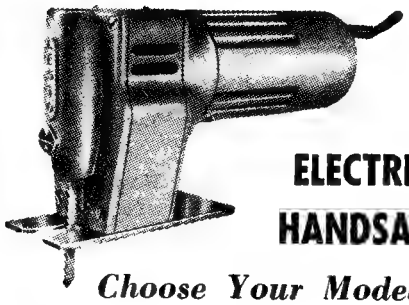

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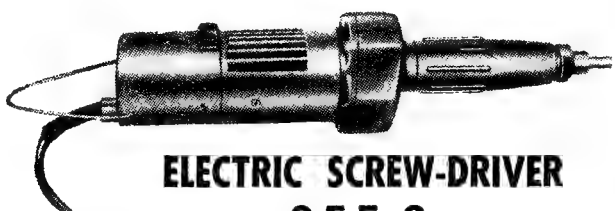

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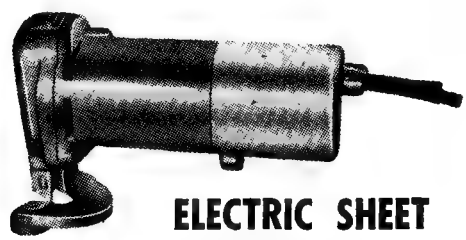

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MAINTENANCE JOBS

Repair the Roof

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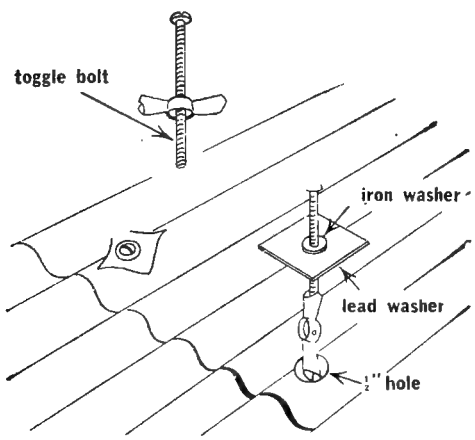
A cracked or broken tile may need renewal, or a badly fitting one may need light lead flashing underneath, but the mainstay for repairing simple leaks is a tin of a bitumen compound like Hydroseal, which can be pressed



mend a bad roof leak with toggle bolts

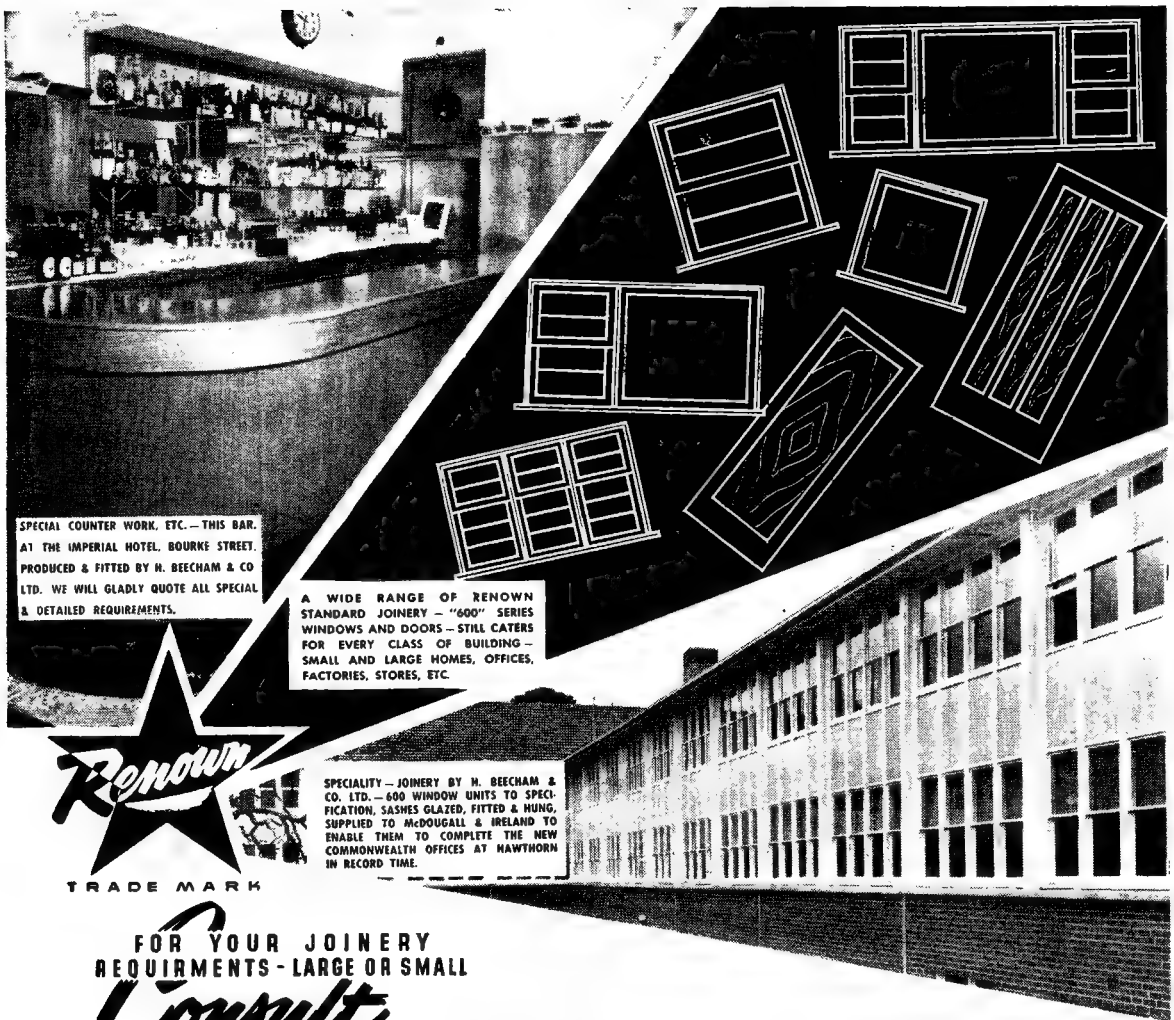
in with a putty knife and does not set really hard, but remains elastic.

Iron roofs can be the cause of additional trouble because the sheets expand in hot weather and loosen the nails. A galvanised screw and a washer may be needed before the leaky joint can be pulled up tight, but even that is not always enough because the batten may be split, and the iron itself bent out of shape.

In one case I know of, the iron on a lean-to roof over the back rooms of a house had been bent through being walked on. When screws were tried they refused to grip. The ceiling inside was fitted on to the rafters and would have been difficult to remove without damage. It seemed as though the iron would have to be removed and re-fixed to new battens with a big probability that the iron would not go back to a snug fit.

The problem was solved by drilling ½ in. holes through sheets and battens and inserting toggle bolts, which, when pushed through, allowed the nut to swing sidewise across the hole. If you try this get 3 in. x 3-16 in. bolts and washers to suit, and cut some washers 1½ in. square from sheet lead.

Before insertion take the bolt out of the nut, slide the washers on to it and coat the



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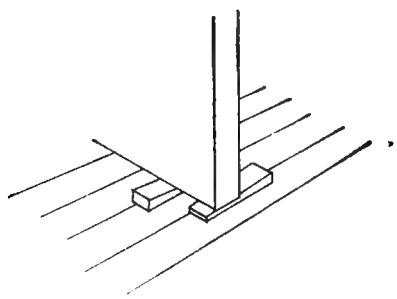
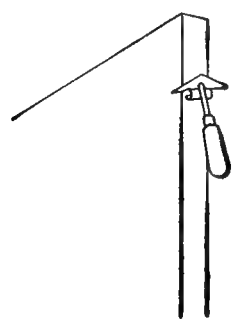
underside of the lead washer and the underside of the bolt head with bitumen.

Bolts 3 in. long will allow the nuts to go well through and swing into place. They can then be tightened carefully by hand, and finished with the screwdriver.

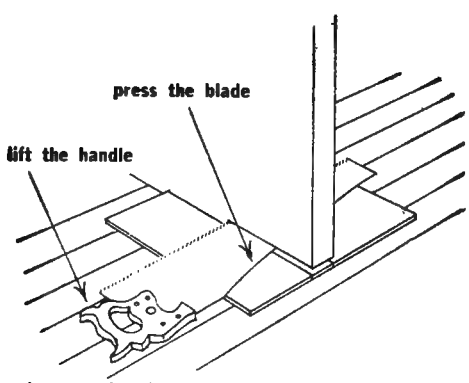
Ease the Doors



wedge a door before trying to plane the edge



scrape the paint off



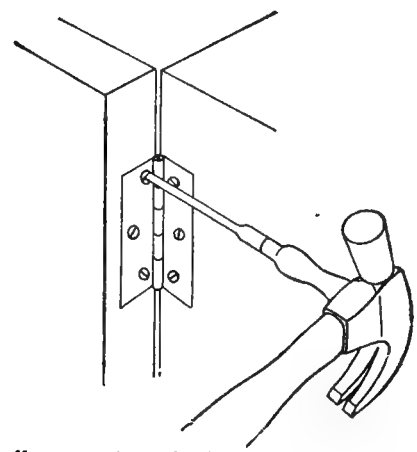
a door can be shortened this way in preparation for a carpet

Doors that stick are another source of annoyance. This is caused by a little movement in timber framing, or by expansion in wet weather. A door edge can usually be planed without removal, but it is helpful to wedge the door first. Don't try to plane the paint. Scrape it off with a painter's shave hook, or an old plane iron, then oil the sole of the plane and proceed. Be careful not to plane off too much or in the wrong places. If you have any doubt mark the tight spots with soft pencil, or chalk on the face of the door.

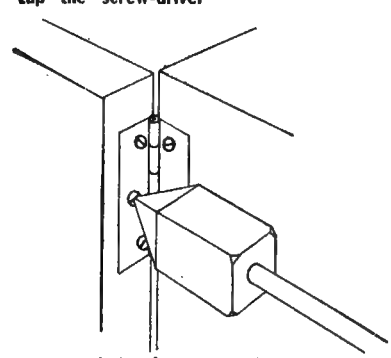
Sometimes a door will rub on the floor, or will not clear a new and thicker floor covering.

If the door is difficult to remove, or if paintwork is liable to be damaged, mark the amount to be sawn off and, using plywood or other thin material, work as shown in the sketch. Press the saw blade down with your left hand and lift the handle with your right to clear the floor. Use a fine saw and get someone to watch the far side of the cut. When the waste is sawn off, place a sheet of sandpaper on the plywood and swing the door across it to remove roughness.

Sticking Screws



if a screw is stuck with paint, tap the screw-driver



a screw that refuses to budge can be expanded with a hot soldering iron — be careful

If a door MUST be removed and the screws are stuck with paint, a few taps on the end of the screwdriver may break the film and allow the screw to turn. It should also crack the paint along edges of the hinges and thus allow them to come away without damage to the jamb.

If a screw is obstinate and rusted in, the application of a hot soldering iron will expand it and leave it ready to turn when it contracts. Do this carefully or the surrounding paintwork may be blistered.

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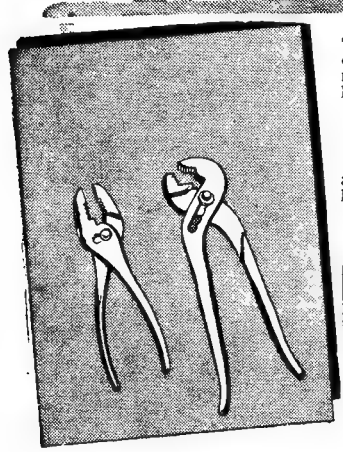

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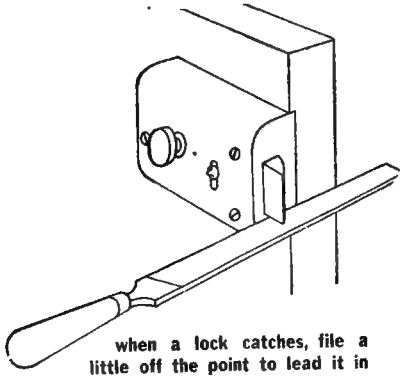
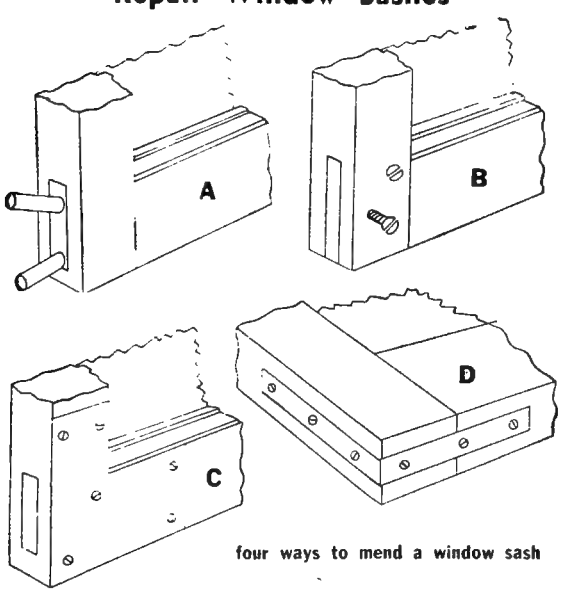
Attend to Locks



when a lock catches, file a little off the point to lead it in

Sometimes a door will drop a little and the lock bolt will not shoot into its staple or striking plate. A corner filed off the bottom will often lead it in without further disturbance; otherwise take the striking plate off the jamb and file that. A little filed off the extreme end will help if the door has expanded. It will often be found, however, that a stiff lock bolt merely needs a thin film of vaseline, or the stick lubricant made for car hinges, to make it work quite easily.

Repair Window Sashes



four ways to mend a window sash

Sketches show four ways of mending faulty sashes. "A" has been broken at the shoulder line, and is repaired by skewboring two dowels to get a dovetail grip. Coat the holes and the dowels with waterproof glue.

"B" shows a rotted bottom rail replaced without removing the glass. Here the stile has been slotted and a full width tenon slipped upwards into place for a glued and screwed joint.

"C" has been repaired with a home-made corner plate, or perhaps one at each side, and "D" makes use of a common 3in. x ½in. angle

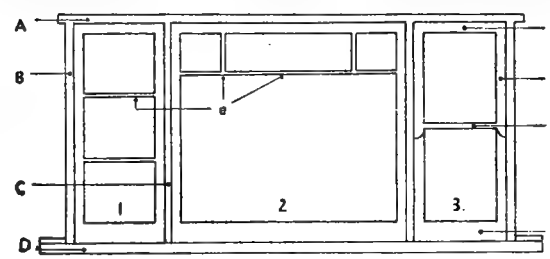
plate. For all these repairs wedge the sash cords in the pulley holes, and take the sashes right out so that they can be laid on battens tacked across the bench.

Replace Window Cords

If window cords are frayed now is the time to replace them. Lever off the outer, or stop bead, with a thin chisel, starting from the middle and working toward top and bottom. The nails may come with it, and should not be driven out from the back, which might damage the outside, but nipped off, or pulled through with pincers. The parting bead is levered out similarly, and then the pocket piece which gives access to the weight is levered out by starting from the bottom of its cut.

A new cord is threaded with the aid of a piece of string and a bent nail, or a bit of lead, called a "mouse," and, after the weight is tied on, it is hauled to the top. The cord is held with a wedge in the pulley hole until it can be nailed to the sash.

KNOW YOUR WINDOW



A window is comprised of the FRAME which is usually fixed in the wall as the building proceeds, and smaller frames called SASHES which carry the glass and are fitted later. Sometimes part of the glass is fitted directly into the frame instead of using a fixed sash as in the centre of our sketch.

The various parts, called members, are:—

THE FRAME

A. HEAD:—Top of frame.
B. STILE:—Outer upright member.
C. MULLION:—Inner upright member.
D. SILL:—Bottom of frame.

THE SASH

a. TOP RAIL:—Top of sash.
b. STILE:—Outer upright member.
c. MEETING RAIL:—Where sliding sashes meet.
d. BOTTOM RAIL:—Bottom of sash.
e. BARS:—Division between glass panes.

Sashes are called 1, 2, 3, light, etc., according to the number of glass panes regardless of size.

Number 1 above is a hinged Casement Sash.
2 is a Fixed Sash.
3 shows a pair of Sliding Sashes.

Confusion sometimes arises between the terms Mullion and Muntin. A Mullion is placed between sashes or doors in a frame. A Muntin is placed between panels in a door or in other panelled work. A thin division between panes of glass is called a Bar.

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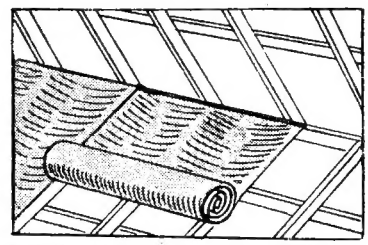
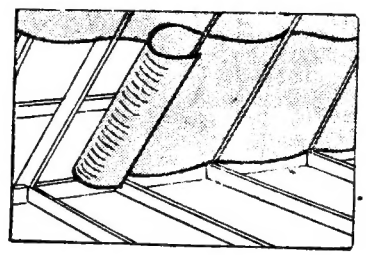
FISH-BAK prevents seepage and roof condensation reaching ceilings and walls.

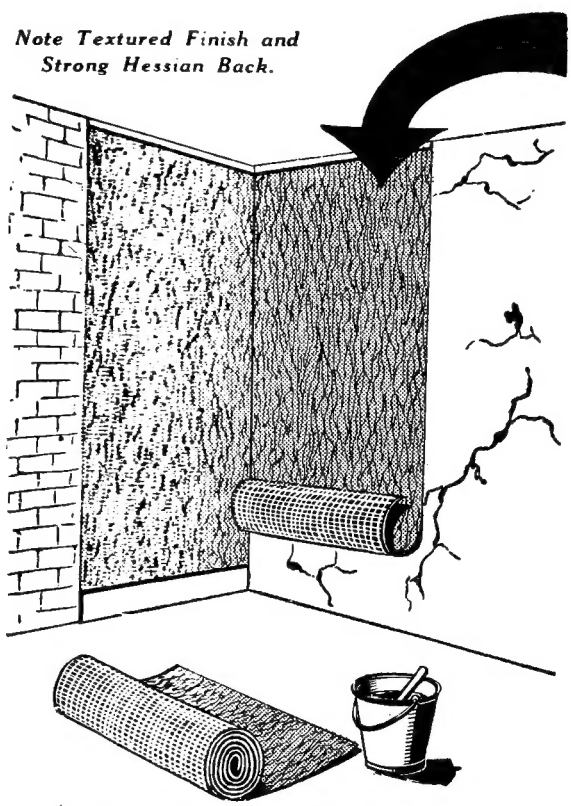
FISH-BAK can be installed ABOVE rafters of homes being built. In existing homes install ABOVE ceiling joists or BELOW rafters as illustrated.



FISH-BAK Above Ceiling Joists



FISH-BAK Below Rafters in Existing Homes



Note Textured Finish and Strong Hessian Back.

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JUTEX responds readily to Paints, Kalsomine and Lacquers.

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JUTEX weatherproof roofing covers and protects garages, sleep-outs, verandahs, sheds and chicken houses.

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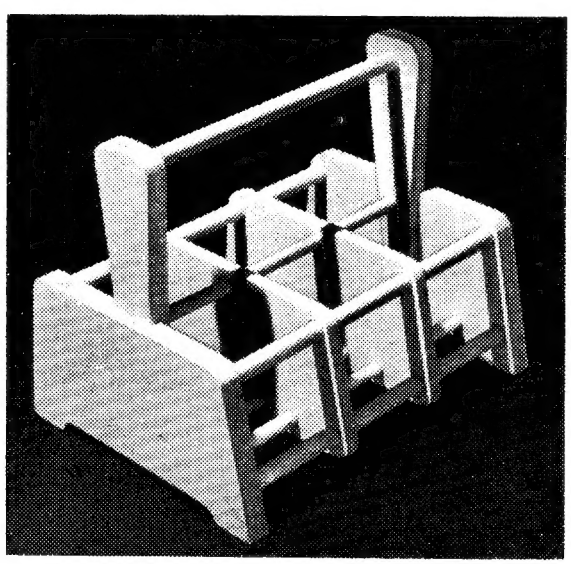
Patterncraft paper patterns and Timber-Packs are available for the kitchen table and chairs shown in the photograph above, as well as for the handy little milk bottle holder shown below.

For full information regarding Patterncraft and Timber-Packs write to The Australian Home Beautiful, Patterncraft Department, Box 2828A.A., G.P.O., Melbourne, Victoria.

A catalogue of current designs will be posted free on request to the above address.



Useful milk bottle holder is another of the many small articles which can be made with the aid of Patterncraft paper patterns by the novice woodworker.

Printed by Herald Gravure for Colorgravure Publications, 44-74 Flinders Street, Melbourne, C.1.

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